



SATURDAY, JANUARY 30, 1875.

Eaton's Improved Freight Car.

The expense of hauling so large a proportion of dead weight to the paying load, as is now carried on railroads, has of late years attracted a great deal of attention, and has been the subject of much discussion among railroad managers. Many of our readers will, therefore, be interested in the engraving of the car which we give in this number, and which was designed by Mr. Richard Eaton, of Montreal, late Master of Motive Power of the Grand Trunk Railroad. Instead of reducing the size and capacity of cars, as is done on narrow gauge and light railroads, he has adopted the opposite method and has doubled the capacity without, he claims, increasing the weight. This has been accomplished by improved methods of construction, which are very clearly shown in the engravings. If these objects are attained, the advantages which will result therefrom are, of course, very great. Thus, the

"the man who suggested the application of steam to the punches, who put his ideas into practical operation and has watched its working," and his explicit and intelligent letter I transcribe for publication in your paper, in the hope that it will be of the same service to others, seeking information in that line, that it is to myself.

O. H. DORRANCE,
Superintendent Kaw Valley Division,
Kansas Pacific Railway.

SHOPS, MORGAN'S LOUISIANA & TEXAS RAILROAD,
ALBANY, January 7, 1875.

G. Pandely, Esq., Supt.:

DEAR SIR.—I cheerfully comply with your request and give you the result of my experience in working "Dudgeon's hydraulic punches," both by hand and steam power, thickness of iron punched, size of holes, number of men required, accuracy of punching, how labor is distributed, number of holes punched per day, etc., etc.

The thickness of rail where punched is $\frac{3}{4}$ and $\frac{1}{2}$ inches, is the old pattern of chair or Erie rail, and is of such shape that at top and bottom of hole the thickness is $\frac{1}{4}$ of an inch, while at the center it is but $\frac{1}{8}$, and is therefore much more difficult to punch than if rolled with two very nearly parallel faces. The portion of our iron which has been repaired at ends is in most cases thicker by $\frac{1}{4}$, and sometimes $\frac{1}{2}$ inch: this, of course, makes it still more difficult to punch.

The breaking of dies and punches, and the repacking of rams and screws is about equal to that while working by hand, in proportion to work done. I think we would break but few punches and dies, nor destroy the packing of rams and screws often, if we had iron to punch of the ordinary "fish" pattern, where the two sides are so nearly parallel, for the reason that there would be no tendency to crowd the punch down or up. It is often the case, with our "Erie" iron, that the die goes down and the punch goes up, thereby forcing them "out of line," resulting in breaking one or the other—sometimes both—or the packing is destroyed in screw or ram.

I am satisfied that the steam punches are doing the work much more economically than it could be done by hand, and twice as fast. The cost of each will of course have to be considered, together with quantity of work to be done. It has cost us about \$600 to apply steam to each punch.

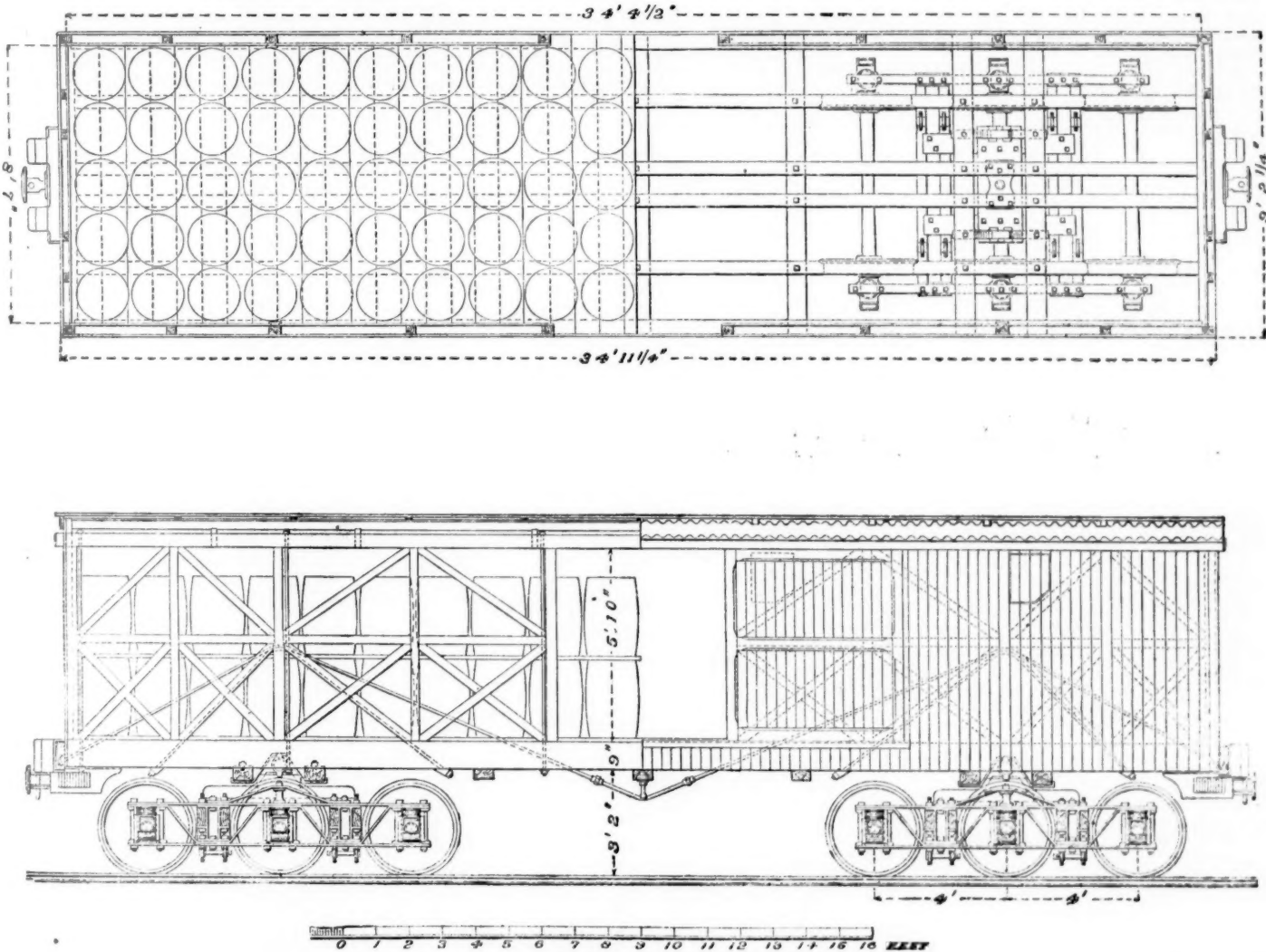
Very respectfully,
N. TILTON.

The Importance of Detailed Railroad Statistics.

ROME, N. Y., 20th January, 1875.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I noticed recently an article in the *Gazette* urging railway men to furnish more detailed statistics. You present much of general statistics that are interesting and valuable; but



EATON'S IMPROVED FREIGHT CAR.

usual load for ordinary cars is 20,000 lbs., their weight being about the same. A train of 30 cars will, therefore, carry 600,000 lbs. of freight. The cars will be of about equal weight, and, with that of the locomotive, the total weight of the train will be 1,300,000 lbs. A train of the improved cars, of equal weight, would consist of 20 such loaded cars. They will, however, each carry 40,000 lbs. of freight, or a total of 800,000 lbs., or one-third more than the other train. Three trains of the improved cars will, therefore, transport as much freight as four with ordinary cars. The saving resulting therefrom is, of course, very apparent.

These cars are especially intended for the grain traffic of the east and west roads, and their use, it is claimed, will reduce the cost of transportation very materially. For further information inquiries may be addressed to Mr. Eaton, at Montreal, Canada, or to Mr. Charles F. Menon, at the rooms of the Master Car Builders, No. 113 Liberty street, New York.

Contributions.

Punching Rails in Place by Steam.

LAWRENCE, Kan., January 12, 1875.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A short time since I desired information as to the utility and economy of machinery for punching track rails in place, and was referred to G. Pandely, Esq., Superintendent of Morgan's Louisiana & Texas Railroad, New Orleans, as having used "Dudgeon's Hydraulic Punch" for that purpose. Mr. Pandely very kindly referred my inquiries to Mr. N. Tilton,

The size of holes is 13-16 by 1 inch. When working one punch by hand, we have only been able to punch from fifty to eighty holes in one day. By steam we have punched from 100 to 200 per day. The reason that more are punched in one day than another is, that we at times work one or two days without breaking a punch or die, and at other times have broken as many as four punches and one die in a single day. The causes of the breakage of so many are the irregular shapes of iron, the difficulty of getting the top and bottom of the punch to strike at the same time—if too high it crowds down, and if too low it crowds up. I mean by irregular-shaped iron that which has been repaired.

It only requires ordinary care to be able to punch the holes accurately. No trouble has been experienced in making the plates fit properly.

It is desirable that both punches be worked side by side, but impracticable, as one or the other is almost daily breaking punches, or having to stop to renew the leather packing in ram or screw of punch.

To work one punch by hand, it requires eight men; two to go ahead and draw spikes, remove chairs, and block up rail one inch high; three men are required to work the punch—one to put on plates and bolts, and two to tamp up ties after the punch. I think the maker of these punches claims that two men are all that are necessary to work the punch, but we have found it necessary to use three.

To work one of our steam punches, it requires twice the number of men, except to work the punch but two are required. Cost of fuel etc. to run steam punch will not exceed one dollar per day.

you call for more particulars. No doubt you are right in seeking for detail. What you want is a statement of facts that will permit analysis, so as to show the cost of each important item. Without such, railway expenses cannot be well understood. There is some difficulty in keeping these in a way that shows the cost of each, and of the different services. Most railways have a mixed traffic of passenger and freight. Engines and trains are run on the same track, and, therefore, it is very difficult to determine the cost of maintaining the track, as chargeable to each kind. So long as this course of business is pursued (and it will, for the most part, be for a long time on most railways), this item will be mixed, so as to render accuracy impossible, and it can only be approximated by careful attention to other items. The repairs of engines will be a pretty fair test of the repairs of track. To avail of this, I recommend that strict accounts be kept of the repairs of each class of engines, passenger and freight. In this all switching engines should be excluded. They only operate on short sections of track, and may be estimated from their relative mileage. I see no better way to get a discrimination as to cost of track on the respective classes. This process secures very definitely the relative cost of power for each class, provided the fuel is also kept separate. To make it more complete, a separate account should be kept of oil, waste, &c. If this suggestion be well carried out, a very close approximation may be had of the most difficult statistics.

There is another feature attended with difficulty, namely, fast and slow speed for freight trains on the same line. So long as this practice continues it will be impossible to settle from proper data the economy of transportation in relation to

speed. This may be corrected by a thorough practice at certain rates of speed. After having settled the expenses relative to passengers and freight, at certain rates of speed, then by adopting, for sufficient time, a higher or lower rate, some approximation may be had. This last is, no doubt, a very important question in the economy of railways.

The repairs, fuel, waste, oil, etc., of each class of engines may easily be kept separate. The repairs of cars and coaches may easily be kept separate, and show definitely the cost of each per mile run.

A very important question to railways is, the weight of their dead stock. If thorough statistics were kept, it might be shown that a large part of the dead weight could be reduced by substituting a better quality of material. Take, for instance, iron, largely used for this purpose and made of very different qualities. Between an ordinary refined and the best quality, the weight of the latter for the same strength is not over 75 per cent. of the former. The difference is even greater than this. It is obvious 25 per cent. of dead weight in the iron of the car is hauled for nothing. The same saving by a superior quality of timber and other materials. There is not the least difficulty in obtaining superior iron, at an addition in price that will not be materially greater than what is saved in weight, and so the cost will not be increased by the superior quality. If a better quality of timber cannot be had the plan should provide for such deficiency by the use of iron. It would be easy to reduce the weight of a ten-ton freight car two tons below the usual weight, and have a car that would be more durable. Now, look at cars, running 20,000 miles a year and carrying two tons unnecessary dead weight. Here we carry 40,000 tons one mile for nothing. Why is this? In the first place, we have no

the vertical line 55.5. This is midway between those marked 55 and 56, and midway between the fine lines for $D = 55.4$ and 55.6. Follow up this imaginary line to the inclined line $c = 9.8$; and placing the needle-point on the point of intersection, the solidity is seen to be 712; the fine horizontal line for $s = 710$ being immediately below it. The total volume of the solid is then $500 + 712 = 1,212$ cubic yards.

24. SECTIONS CAN BE REDUCED TO AN EQUIVALENT LEVEL CENTER-HEIGHT BY MEANS OF THE CURVE OF LEVEL SECTION, as follows:

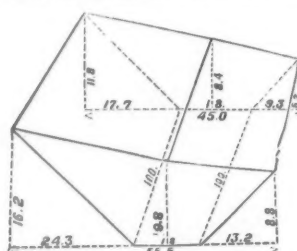


Fig. 8.

lows: After having determined the point of intersection for the values of D and c in any given case, and the horizontal line on which it lies, follow along that horizontal line till it intersects the Curve of Level Section. The inclined line of c , interpolated if necessary, which passes through this point of intersection, gives the centre-height required.

The principle of this is obvious. The two sections must necessarily have the same area, since the points of intersection found for them are on the same horizontal line.

EXAMPLE.—Take the first section of fig. 8. After determining on fig. 7 or Plate II., that the point of intersection, as obtained in paragraph 21, lies on the line 500, follow along that

Irregular earthwork of every form may be computed from the diagram of prismoidal correction in a similar way to that used in computing fig. 16 above.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

North Brookfield Branch.—This company was organized at North Brookfield, Mass., recently, by the election of the following directors: Alden Batcheller, T. C. Bates, T. M. Duncan, S. S. Edmunds, John Mill, W. H. Montague, Bonum Nye, Liberty Stone, Freeman Walker. The board organized by electing Bonum Nye, President; Alden Batcheller, Vice-President; S. S. Edmunds, Treasurer; T. M. Duncan, Clerk.

Connecticut River.—At the annual meeting in Springfield, Mass., January 20, the following directors were chosen: Daniel L. Harris, Chester W. Chapin, Springfield, Mass.; Oscar Edwards, Northampton, Mass.; W. B. Washburn, Greenfield, Mass.; S. M. Waite, Brattleboro, Vt.; Roland Mather, Hartford, Conn.; Edward A. Dana, I. M. Spelman, Charles S. Sargent, Boston. The only change in the board is the election of Charles S. Sargent to succeed his father, who declined re-election, after having served 25 years as a director of the company.

Baltimore & Ohio.—Mr. Robert Stewart has been appointed General Superintendent of Telegraph, and will take charge February 15. Mr. Stewart has been Superintendent of Telegraph of the United Railroads of New Jersey Division of the Pennsylvania Railroad since the lease, and was for many years previously connected with the New Jersey lines.

Maine Central.—Mr. L. L. Lincoln, General Superintendent, will hereafter have full charge of the operation of this road, Mr. C. F. Hatch having retired from the position of General Manager.

New England General Freight Agents' Association.—At the

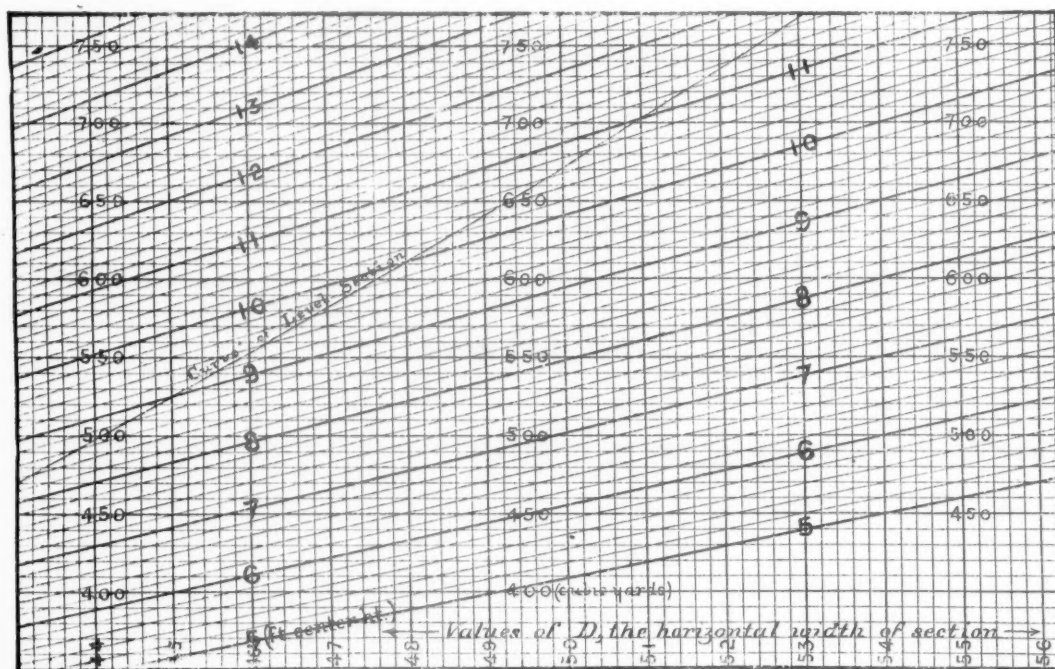


Fig. 7.—Extract from Diagram of Cross-Sections; Road-bed, 18, 1 1/2 to 1.

proper statistics. In the second, our railway managers are rarely men who could analyze them if they had them. The science of railway management calls for the illustrations of problems that are often involved, being made up of facts that more or less run into each other, and can only be determined by careful and persistent investigation of those facts.

All I can say is, urge the full statistics: they are indispensable to an understanding of the subject.

JOHN B. JERVIS.

Computation of Earth-work from Diagrams.

The new work of Mr. A. M. Wellington on earth-work computation presents a radically different method from that usually pursued by the use of tables. It would not be easy to describe this method clearly in words, but by the use of the accompanying diagram, published in the work for the purpose of explaining the use of the atlas of plates, which takes the place of the ordinary tables, engineers will be able to follow out Mr. Wellington's method of procedure. The description is taken from the chapter of the work on "Formulae and Rules."

21. RULE FOR USE OF DIAGRAM.—First add together the distances out of the two slope-stakes, to obtain the value of D [the horizontal width of section]. Then follow up the vertical line representing the given value of D to its intersection with the inclined line representing the given centre height, or value of c . Hold the point of intersection, and read off the solidity for a half-station from the horizontal lines.

The sum of the quantities for any two sections is the end-area solidity between them for a full station. For fractional or plus stations, multiply that sum by the proper decimal part of 100 feet.

EXAMPLE.—To compute the solid shown in fig. 8. For the first section, take on Plate III., or on fig. 7, which is an extract from Plate III., the vertical line marked 45—the value of D for the first section—and follow it up to the inclined line representing the given centre height, 8.4. A heavy line marked 8 is first met with, the next line above is 8.2, and the next line is 8.4. Place the needle-point on the intersection of these two lines, and read off the solidity from the horizontal lines.

In this case the point of intersection lies exactly on the line 500; which is the solidity required. Had the center height been 8.6, the solidity would have been 508; had the center height been 8.8, the solidity would have been 517; and had it been 9.0, the solidity would have been 525.

To read off the solidity of the second section, determine first

line till it cuts the Curve of Level Section. The inclined line passing through the point of intersection is read off as 8.7; which is the equivalent level centre height. In the second section, the equivalent level centre-height is read off in the same manner as 11.1.

57. FIVE-LEVEL CROSS-SECTIONS.—i. e., those in which two additional surface-levels are regularly taken over each road-bed angle, as shown in fig. 16—may evidently be divided into three sets of two triangles each, and computed in a similar way from the diagram of triangular prisms (no extract from which is given here) as follows: Enter the diagram successively, with the center-height and width of road-bed, and with the distance out to each slope-stake and corresponding road-bed level. The sum of the three quantities obtained is the solidity.

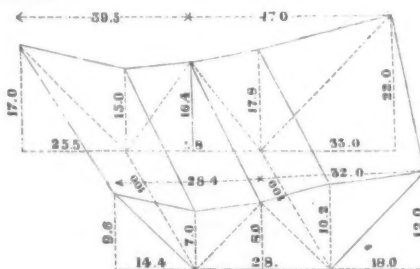


Fig. 16.

EXAMPLE.—The prismoid shown in fig. 16. To compute the solidity, entering the diagram of triangular prisms with

$D = 28.0, c = 16.4$, we obtain... 425
 $D = 39.5, c = 15.0$, " " " 549
 $D = 47.0, c = 17.8$, " " " 775

For the second section, entering with

$D = 28.0, c = 8.0$, we obtain... 207
 $D = 28.4, c = 7.0$, " " " 184
 $D = 32.0, c = 10.2$, " " " 302

Total and-area solidity... 2,442

After determining the above end-area solidities, the true solidity of the prismoidal formula of either solid above may be determined exactly by a correction taken at inspection from the diagram of prismoidal correction, or, approximately, by a similar correction taken from a little table in the volume. But whether these subsequent corrections are made or not is a matter of choice.

annual meeting in Boston, January 20, the following office were chosen: President, W. J. C. Koney, Boston & Maine; Vice-President, J. M. Williams, Worcester & Nashua; Secretary, J. W. Hildreth, Concord Railroad.

Lehigh Valley.—At the annual meeting in Philadelphia, January 19, Hon. Asa Packer was re-elected President, with the following directors: Wm. L. Conyngham, J. Gillingham, Fell, Wm. H. Gatzmer, Charles Hartshorne, Wm. L. Ingham, John Taylor Johnston, Wm. W. Longstreth, George B. Markle, Arlo Pardee, David Thomas, Ashbel Welch, Joseph Wharton. The board elected Charles Hartshorne Vice President; Lloyd Chamberlain, Treasurer; John R. Faphaw, Secretary; I. W. Morris, Assistant Secretary; John B. Garrett, Auditor.

Davenport & St. Paul.—At the annual meeting in Davenport, Ia., January 21, the following directors were chosen: George H. French, J. H. Berryhill, John E. Henry, M. Donahue, A. C. Fulton, L. S. Davies, A. J. Preston, Davenport, Ia.; J. E. Goodenow, Maquoketa, Ia.; George Rule, Big Rock, Ia.; George W. Lathrop, Oxford Mills, Ia.; F. B. Doolittle, Delhi, Ia.; M. O. Barnes, Enfield, Ia.; A. Beadle, Cresco, Ia.; H. S. Brunson, Fayette, Ia. The new directors are Messrs. Davies, Preston and Barnes, who replace G. H. Parker and J. B. Cook, there being apparently only one more director this year than last. The board elected George H. French, President; J. H. Berryhill, Vice-President; S. Connor, Secretary and Treasurer; G. H. French, J. H. Berryhill, J. E. Henry, M. Donahue, A. C. Fulton, Executive Committee.

Michigan Central.—Mr. A. E. Smith has been appointed General Agent at Bay City, Mich. Mr. C. F. Barron has been appointed Commercial Agent at Detroit. The offices of the Assistant General Freight Agents at Detroit and Saginaw will be discontinued after January 31.

Utica, Clinton & Binghamton.—At the annual meeting in Utica, N. Y., January 20, the following Board of Directors was chosen: O. S. Williams, John Thorn, Isaac Maynard, John E. Elliott, A. W. Mills, Joseph W. Forward, N. W. Parker, George B. Phelps, H. Hopson, Robert S. Williams, D. M. Miner, Alex. Holland, Charles H. Smythe. Inspectors of Election, F. B. Hanchett, J. M. Browning, J. C. P. Kincaid. At a meeting of the new board the following were chosen: President, O. S. Williams; Vice-President, Isaac Maynard; Secretary, J. W. Church; Superintendent, W. H. Schuyler. Executive Committee—O. S. Williams, Isaac Maynard, A. W. Mills. Committee in Charge of Operating Street Railroads—J. E. Elliott, Robert S. Williams, A. W. Mills. The road is leased by the New York & Oswego Midland.

Baltimore & Potomac.—Mr. G. C. Wilkins, the new General Superintendent, has appointed Mr. H. W. Kapp Trainmaster and Mr. H. R. Linthicum, Road Foreman of Engines.

Norwich & Worcester.—At the annual meeting recently the following directors were chosen: A. F. Smith, John F. Slater,

Norwich, Conn.—F. H. Dewey, Geo. W. Gill, Charles W. Smith, Edward L. Davis, Worcester, Mass.; Robert Bayard, New York; Wm. W. Weld, Charles Merriam, Boston. At a subsequent meeting of the directors, A. F. Smith was re-elected President, E. T. Clapp Secretary, and G. L. Perkins, Treasurer.

Colebrookdale.—At the annual meeting, January 11, the following directors were chosen: T. L. Bailey, D. B. Boyer, John C. Smith, D. T. Brown, T. L. Bell, Wm. A. Church, R. B. Caben. The Board elected the following officers: President, T. L. Bailey; Secretary, Howard Hancock; Treasurer, John Welch. The road is worked by the Philadelphia & Reading.

Montreal & Vermont Junction.—At the annual meeting, January 13, the following directors were elected: P. H. Moore, J. G. Smith, W. C. Smith, Jo. D. Hatch, Jed. P. Clark, F. G. Des Rivières.

Johnstown & Somerset.—At the annual meeting in Johnstown, Pa., January 11, the following officers were elected: President, D. J. Morrell; Directors, John H. Snyder, Valentine Miller, W. J. Baer, E. A. Vickroy, George W. Osborn, James Cooper, John Lowman, David Diebert, James Morley, A. Lambert, James McMillan, John H. Cunningham.

Penobscot Bay & River.—At a meeting of the new board of directors recently, Hon. Wm. McGilvery, of Searsport, Me., was chosen President, vice N. G. Hichborn, deceased, and T. A. Snow, Winterport, Me., Treasurer.

Peach Bottom.—At the annual meeting in Peach Bottom, Pa., January 11, the following directors were chosen: John A. Alexander, S. G. Boyl, Samuel Dickey, John Humphreys, Z. B. Locks, A. C. Manifold, Charles B. McConkey, Sanders McCullough, Nathaniel Mayer, Robert B. Patterson, Sister B. Russell, Michael Schall, William Wallace. Mr. S. G. Boyd was chosen President; A. C. Manifold, Treasurer; Wm. Wallace, Secretary. The only change from last year is the substitution of John Humphreys in the board for L. W. Finley.

Long Point Coal, Land & Railway Company.—Capt. Frank T. Wilson, Superintendent of the Salisbury & Baltimore Railroad & Coal Company was chosen Manager of this company at the annual meeting in Philadelphia, January 12.

Peoria & Rock Island.—The United States Circuit Court has appointed Mr. John R. Hilliard, the present General Superintendent, Receiver.

Moslem.—At the annual meeting, January 11, the following directors were chosen: Nicholas Hunter, Franklin B. Goven, George D. Stutzel, J. R. Bell, William A. Church, John Walker, Jr., William L. McDowell. The board elected Nicholas Hunter, President, and Howard Hancock, Secretary. The road is controlled by the Philadelphia & Reading.

Union Steamboat Company.—At the annual meeting in Buffalo, N. Y., January 13, S. L. M. Barlow, George R. Blanchard, W. Bullard, Hugh J. Jewett and Henry G. Stebbins were chosen directors. The board elected the following officers: President, George R. Blanchard; General Manager, Washington Bullard; Treasurer, Wm. P. Shearman; Secretary, A. R. McDonough.

Delaware.—At the annual meeting in Dover, Del., January 12, the following directors were chosen: S. M. Felton, Isaac Hinchley, A. C. Gray, Chas. Warner, Joseph Bringham, Edward Bringham, Isaac Jump, H. B. Fiddeman, Manlove Hayes, Alexander Johnson, William H. Ross, Albert Curry, J. Turpin Moore. The board re-elected S. M. Felton President and Manlove Hayes Secretary and Treasurer.

Utah Southern.—The new board of directors has re-elected William Jennings, President; L. S. Hills, Treasurer; George Swan Secretary; D. J. Swan Assistant Secretary; Feramor Little, Superintendent.

Indianapolis & St. Louis.—Mr. Russell Elliot has been appointed Auditor in place of A. J. McDowell, who has accepted a position on the Erie.

Erie.—Mr. A. J. McDowell, late of the Indianapolis & St. Louis, has been appointed Assistant Auditor.

Sheboygan & Fond du Lac.—At the annual meeting in Fond du Lac, Wis., January 20, the following directors were chosen: J. A. Bentley, Sheboygan, Wis.; Edwin Slade, Glenbeulah, Wis.; A. J. Ruggles, E. N. Foster, Fond du Lac, Wis.; S. M. Barrett, Cincinnati, O.; Moses Taylor, R. G. Rolston, New York. The board re-elected J. A. Bentley, President and Superintendent; A. G. Ruggles, Vice-President and Treasurer; Edwin Slade, Secretary.

Worcester & Nashua.—At the annual meeting in Worcester, Mass., January 21, the following directors were chosen: Francis H. Kinnicut, Stephen Salisbury, Francis H. Dewey, Alexander H. Bullock, J. E. Smith, Isaac Davis, Worcester, Mass.; Jacob Fisher, Lancaster, Mass.; Calvin D. Hill, Thomas Chase, Nashua, N. H. The board re-elected F. H. Kinnicut President and T. W. Hammond Clerk and Treasurer.

Mount Sterling.—At a recent meeting the stockholders elected the following directors: H. E. Shawhan, J. West, J. Peck, J. Q. Ward, Cynthia, Ky.; C. J. Glover, J. M. Bent, Thomas Turner, Mount Sterling, Ky. The board elected C. J. Glover President; J. Q. Ward, Vice-President; Frank Fitch, Secretary; William Mitchell, Treasurer; R. H. Fitch, Chief Engineer.

New Jersey Midland.—Hon. H. C. Eastman, of Poughkeepsie, N. Y., has been chosen a director in place of Dewitt C. Littlejohn, resigned. Mr. R. P. Terhune has been appointed Treasurer in place of Ezekiah Watkins.

New York, New Haven & Hartford.—The new board of directors has re-elected Wm. D. Bishop, President; E. M. Reed, Vice-President; J. T. Shelton, Treasurer.

Monterey & Salinas Valley.—At the annual meeting, Jan. 11, C. S. Abbott, Wm. Fort, A. Gonzales, David Jacks, Charles Laird, Robert McKee, and Wm. Robson were chosen directors. The Board elected C. S. Abbott, President; Charles Laird, Vice-President; David Jacks, Treasurer; John Markley, Secretary; J. W. Nesbitt, Superintendent.

Toledo, Peoria & Warsaw.—The United States Circuit Court in Chicago has appointed A. Lawrence Hopkins Receiver. Mr. Hopkins was formerly Vice-President of the Illinois Central.

Jersey Shore, Pine Creek & Buffalo.—At the annual meeting in Condersport, Pa., Jan. 11, Sobieski Ross, of Condersport, was chosen President, with the following directors: Charles H. Armstrong, Arch. F. Jones, George B. McClellan, Arthur G. Olmstead, John S. Ross, Pierre A. Stebbins.

Lafayette, Bloomington & Mississippi.—At the annual meeting in Bloomington, Ill., January 19, the following directors were chosen: J. D. Cox, W. B. Corneau, J. S. Casement, Toledo, O.; James Speare, Lafayette, Ind.; A. Gridley, O. T. Reeves, Bloomington, Ill.; W. A. Riggs, Saybrook, Ill.; C. Bogardus, Paxton, Ill.; C. M. Smith, C. Ridgeley, Springfield, Ill.; A. B. Baylis, New York.

The representatives of the other or town stock party also held a meeting at the same time and place and chose another board of directors as follows: E. F. Henderson, Towanda, Ill.; N. S. Sunderland, Bloomington, Ill.; N. Dixon, Padua, Ill.; J. H. Collier, Gibson, Ill.; W. H. Thompson, Arrowwood, Ill.; P. Van Weiden, Ellsworth, Ill.; G. Sample, B. Butterfield, W. F. Young, blood, Paxton, Ill.; J. B. Henderson, Cheney's Grove, Ill.; A. B. Ferguson, Fond, Ill. This board elected E. F. Henderson President, and Merton Dunlap, Paxton, Ill., Secretary.

Springfield & Illinois Southeastern.—The purchasers at the late foreclosure sale, having taken possession of the road, have appointed Mr. Charles A. Beecher, late Receiver, General Manager and Superintendent.

Providence, Warren & Bristol.—At the annual meeting in Providence, January 25, the following directors were chosen: T. P. J. Goddard, Providence, R. I.; Wm. Goddard, Warwick, R. I.; Samuel W. Church, Bristol, R. I.; John H. Clifford, New Bedford, Mass.; Wm. R. Robeson, Henry A. Whitney, F. W. Weld, Boston.

Peoria, Pekin & Jacksonville.—The President, Mr. John Allen, will for the present act as Superintendent, in place of Mr. J. F. Kelly, resigned.

Baltimore & Ohio.—The Baltimore City Council in joint meeting, January 25, elected the following city directors of this company for the ensuing year: Charles H. Nicolai, John G. Medinger, Simon J. Kemp, Thomas White, Morris A. Thomas, R. T. Banks and John F. Wiley. Mr. Medinger takes the place of James Webb, deceased, and Mr. Thomas the place of A. Robert May, these being the only changes from the present board.

PERSONAL.

—Mr. Charles F. Hatch has resigned his position as General Manager of the Maine Central, but still retains his position on the Eastern Railroad. This action is taken in consequence of the recent change in the relations of the two companies.

—Mr. George C. Merchant has resigned his position as General Freight and Ticket Agent of the Dakota Southern road, to accept a position with the Illinois Central.

—Mr. Wm. H. Aspiwall, who died in New York January 18, was an old and wealthy merchant of that city, well known for his extensive commercial dealings and for his large ownership of steamship property. He was one of the chief promoters of the Panama Railroad, and owned a large interest in it. He was also for some years a director of the Ohio & Mississippi and the Consolidation Coal Company.

—Mr. Milton A. Clyde, a member of the great contracting firm of Dillon & Clyde, died at his residence in Springfield, Mass., January 24, after an illness of several weeks. He had been engaged in many important works, his last being the Fourth Avenue Improvement on the New York & Harlem road.

—Mr. D. Clunster, Secretary of the Indiana North & South Railroad Company, and an old and highly esteemed citizen, died at his residence in Attica, Ind., January 21.

—Mr. John R. Wilder has resigned his position as a director of the Central Railroad Company of Georgia. He had been a director 28 years.

TRAFFIC AND EARNINGS.

—The earnings of the Portland & Ogdensburg Railroad for the year ending November 30 were:

	1874.	1873.	Increase.	P. c.
Earnings.....	\$172,205 90	\$144,982 26	\$27,223 64	18.8
Expenses.....	112,554 39	95,907 28	16,647 11	17.3
Net earnings.....	\$59,651 51	\$49,074 98	\$10,576 53	21.6

Earnings per mile, 1874, \$2,392; 1873, \$2,265; per cent. of expenses, 1874, 65.36; 1873, 62.15.

—The earnings of the Great Western Railway of Canada for the week ending January 1 were: 1875, \$16,342; 1874, \$21,378; decrease, \$5,036, or 23.5 per cent.

—The earnings of the Grand Trunk Railway for the week ending January 2 were: 1875, \$39,200; 1874, \$34,000; increase, \$5,200, or 15.3 per cent.

—San Francisco wheat shipments for the first half of the crop year were 273,995 tons of wheat; flour shipments, 200,400 barrels. Reducing flour to wheat, the shipments were: 1874, 305,415 tons; 1873, 283,370; increase, 22,045 tons, or 7.13-16 per cent.

—The earnings of the Houston & Texas Central Railroad for 1874 were:

Earnings (\$6,233 per mile).....	\$3,166,308 27
Expenses (\$9.93 per cent.).....	1,897,614 01

Net earnings (\$2,498 per mile).....\$1,268,754 26

—The earnings of the St. Louis & Southeastern Railway for December were: 1874, \$102,912; 1873, \$96,342; increase, \$6,570 or 6.7 per cent. For the year ending December 31, the earnings were: 1874, \$1,258,754; 1873, \$1,294,498; decrease, \$35,744, or 2.7 per cent. Earnings per mile, 1874, \$3,607; 1873, \$3,709.

—The coal traffic of the Geneva, Ithaca & Athens Railroad for the three months ending December 31 was: anthracite, 47,580 tons; bituminous, 19,346; total, 66,926 tons.

—The earnings of the Denver & Rio Grande Railway (main line) for the second week in January were: 1875, \$4,131; 1874, \$5,427; decrease, \$1,296, or 23.9 per cent. Traffic was seriously impeded by severe weather and the blockade of Eastern connecting lines.

—The earnings of the Springfield, Athol & Northeastern Railroad for the year ending September 30, 1874, were as follows:

Earnings (\$1,800 per mile).....	\$86,837
Expenses (66.21 per cent.).....	57,491

Net earnings (\$611 per mile).....\$29,846

—The grain movement is extremely light. The Western receiving cities received during the week ending Jan. 16 75,980 barrels of flour and 1,611,271 bushels of grain of all kinds in 1875 against 123,518 barrels of flour and 2,007,412 bushels of grain of all kinds in 1874, a decrease of 38 per cent. in flour and 19 per cent. in grain. There is a gain in corn, (16 per cent.), of which the market is comparatively bare, but the falling off in wheat is enormous—no less than 63 per cent. For the crop year, from Aug. 1 to Jan. 16, the receipts at these places were 2,796,823 barrels of flour and 75,573.7 bushels of grain of all kinds in 1874-75, against 3,032,417 barrels of flour and 96,643,886 bushels of grain the previous year—a decrease of 7 per cent. in flour and nearly 22 per cent. in grain.

—The crude petroleum receipts at Pittsburgh from Jan. 1 to Jan. 16 were 24,163 barrels in 1875 against 54,846 in 1874. The shipments of refined were 8,162 barrels in 1875 against 12,434 in 1874.

—The petroleum exports from Jan. 1 to Jan. 16 were 8,565,586 gallons in 1875 against 10,775,598 in 1874 and 4,079,830 in 1873.

—The number of hogs packed in the Northwest from Nov. 1 to Jan. 16 was 4,458,238 in 1875 against 4,647,737 in 1873-74 and 4,288,868 in 1872-73. The average net weight of the animals is reported to be about 10 per cent. less this year than last.

—Receipts of crude oil at Pittsburgh for the week ending January 23 were 3,989 barrels. Shipments of refined oil eastward were 2,229 barrels. Both receipts and shipments show a heavy falling off from the previous week.

—The earnings of the Philadelphia & Erie road for the year ending December 31 were:

	1874.	1873.	Increase.	Decrease.	P. c.
Earnings.....	\$3,506,919	\$3,842,007	\$335,148	8.7
Expenses.....	2,438,133	3,413,311	975,178	28.9
Net earnings.....	\$1,068,786	\$4,875	\$640,030	149.3

Earnings per mile, 1874, \$12,177; 1873, \$13,340. Per cent. of expenses, 1874, 69.52; 1873, 88.84.

—The earnings of the Jeffersonville, Madison & Indianapolis road for the year 1874 were as follows:

Earnings (\$5.958 per mile).....	\$1,346,492 73
Expenses (61.71 per cent.).....	830,943 73
Net earnings (\$2.281 per mile).....	\$515,548 73
Dividends, interest and sinking fund.....	497,655 00
Surplus.....	\$17,893 73

The road is leased by the Pennsylvania Company.

—The earnings of the Providence, Warren & Bristol Railroad for the year ending September 30, 1874, were \$111,219.10, or \$8,238 per mile, a decrease from the previous year of \$2,287.66, or 2 per cent.

—The number of freight cars passing through Indianapolis during the week ending January 23 was: 1875, 10,865; 1874, 12,985; decrease, 2,120, or 16.4 per cent.

RAILROAD LAW.

Rights of Holders of Preferred Stock against Holders of Bonds Issued Subsequent to the Stock.

The following case (No. 160) came on in the United States Supreme Court January 16: St. John agt. Erie Railway Company.—Error to the Circuit Court for the Southern District of New York.—St. John, a citizen of Alabama, owner of 330 shares of preferred stock of the Erie Company, filed this bill for himself and others, to obtain a judgment as to the rights of preferred stockholders which should protect them against the wrongful acts of the company. The main question to be decided is whether the preferred stockholders of the company have a right to receive a dividend next after the payment of certain rents and the interest on certain mortgage bonds, which rents and interest arise under leases and mortgages of earlier date than the issue of the preferred stock. The decision of that question of law will determine the principal issues presented by the case, whether before paying a seven per cent. dividend to the owners of \$8,536,910 of preferred stock of the company, it is authorized to pay either interest on \$5,000,000 sterling bonds, or rents under leases of roads or property, which leases and bonds are several years subsequent in date to the issue of the preferred stock. The earnings of the company, it is urged, were not adequate to make the three classes of payments, but were adequate to pay the dividends; but the earnings are used to pay interest and the rents. The appellants claim that the preferred stockholders have a right to dividends next after the payment of the old mortgage interest, and the rent under leases existing when the preferred stock was issued. The respondent denies this right and insists they have no rights beyond those of general stockholders, except to have a dividend of seven per cent. before any dividends are paid to the general stockholders.

The appellants contend that no bonds, rents, or other debts, (except for appropriate expenses of repairing and operating the road as it existed after the date of the preferred stock) can be put in between the bonds and rents (existing when the preferred stock was issued), and such preferred stock, at least with any such effect as to create a prior claim to that of such stockholders upon the net earnings. The company contends that such and as many bonds, rents, and debts as it chooses to issue or agree to, may be brought in next after the old debts, and may be given a priority of claim upon net earnings to the rights of preferred stockholders. On the trial below the decree was adverse to these views of the preferred stockholders and in favor of the company, and the questions are now before this court for review. D. B. Eaton for appellants, W. W. MacFarland for appellees.

On the 25th, the court announced its decision, holding that the holders of preferred stock under the arrangement of 1862 have no preference over bona fide creditors of the company who have become so since the arrangement, and have no right to insist on a dividend unless there is a surplus affirmed.

THE SCRAP HEAP.

Louisville Bridge & Iron Co.

In our issue of January 2 a statement was made that the contract for the iron work for the new government building at St. Louis was made to the St. Louis Bridge & Iron Co. In this St. Louis was a misprint for Louisville. There is no St. Louis company of that name, so far as we know; but the Louisville company is very widely known.

The Troy Steel Works.

The heaviest week's work in the production of Bessemer steel was done at the works of John A. Griswold & Co., at Troy, N. Y., in the week ending January 2. In that week the blast was put on the cupola Monday evening and work continued till Saturday evening, five day and five night turns. During that time 232 heats were run and 1,140 tons 1.232 pounds of ingots made. In the same time the blooming mill rolled 246 heats. During the week ending January 9, 225 heats were run, making 1,101 gross tons of ingots. On Thursday of that week 55 heats, making 271 tons 896 pounds of ingots, were run during the 24 hours.

Railroad Manufactures.

The Passaic Rolling Mill at Paterson, N. J., is running full time and employs about 350 men. A new rotary squeezer has been added to the mill and a new converting furnace is being built.

The Cummings Car Works at West Bergen, N. J., have been turning out a number of passenger coaches for the New Jersey & New York road. The cars are built for standard gauge, but are mounted on trucks of six-foot gauge.

The American Sheet & Boiler Plate Company is making extensive repairs in its mills at Newburg, O., and will start up again in a few weeks.

Wick, Ridgway & Co., of Youngstown, O., are running their rail mill and paying puddlers the old rates, so that they are not affected by the strike.

The North Chicago Rolling Mills have resumed work after a stoppage of two weeks for repairs, and are running full time.

The Indianapolis Rolling Mill is turning out a lot of rails for the Indianapolis, Peru & Chicago.

British Rail Exports.

The Board of Trade report shows that exports of railroad iron of all sorts from Great Britain for the month of December were 29,096 in 1874, against 49,550 in 1873 and 65,938 in 1872. For the year the exports were 782,437 tons in 1874, 785,014 in 1873, and 945,420 in 1872.

The exports to the United States in December were 1,021 tons in 1874, against 7,747 in 1873 and 31,686 in 1872. For the year the exports to the United States were: 1874, 94,466 tons; 1873, 186,300; 1872, 467,304. The value of the exports to the United States in 1874 is reported at \$1,289,460, being all or nearly all steel rails. We took in 1872 very nearly one-half of the British rail exports (48 per cent.), in 1873 23 per cent., and in 1874 only about 12 per cent.

The Pig Iron Manufacturers.

The Secretary of the American Iron & Steel Association announces that the required two-thirds of the furnace owners to whom it was submitted have not approved the agreement to reduce production in 1875 which was adopted at the meeting held in December, 1874. In fact, less than one-third have signed. The agreement having thus failed is, of course, not binding upon those who have signed it.



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Editorial Announcements.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE RAILROAD BUREAU.

The organization begun at Saratoga last August at the suggestion of managers of Eastern trunk lines seems to find the greatest opposition, or at least the greatest difficulty in carrying out its policy, in the West. This, probably, was not expected; for usually it has been comparatively easier to establish and maintain uniform and satisfactory rates from the West eastward than from the East westward; and the Western lines make the eastward rates. Nearly every year, and often for half the year, westward rates are very low and irregular; and Western companies are always complaining of their losses on westward shipments, the rates on which they cannot control. The Eastern lines seemed to be those which most needed bit and bridle, and the Western ones those which would be most willing to submit to them. Still, since the Saratoga agreement, the Eastern contracting powers seem to have got along pretty harmoniously. They have kept the rates very low most of the time, but that was chiefly because traffic would not move at higher rates; and the rates agreed upon seem to have been maintained quite satisfactorily. In the West, however, the Saratoga agreement was never accepted by a great many companies, though most of these were willing to accept its provisions for establishing rates, it being merely a substitution of one set of men for another for doing this work, and the new Bureau being composed of remarkably fair-minded, unprejudiced men. Still, we now find irregularities in rates practiced by companies both in and out of the combination, and freight rates eastward demoralized very much as westward rates frequently are in the summer. The railroads are carrying at unprofitable rates, they are quarreling with each other, they disown the Bureau, and the Saratoga agreement seems less likely than ever to secure the adhesion of the companies generally and a harmonious and fixed policy, such as is desirable at all times, and in these days of scanty earnings is so especially. A Chicago meeting of the Western Commissioners got little attention from the companies; a Cleveland meeting not much more; and now on Wednesday next a convention is to be held in New York, where we suppose it is possible that there will be a reorganization, and possibly a disorganization.

The lack of success in the West has not been so unaccountable as it may have seemed. The railroad companies there may have appeared more inclined than elsewhere to maintain rates and keep the peace; but this disposition, we fear, cannot be imputed to any peculiar

virtues of the Western companies, but rather to their peculiar circumstances. They have usually had a good business at good rates. There are three or four car-loads eastward to one westward, and heretofore usually this traffic has grown rapidly and almost without interruption. Rates almost regulate themselves under such circumstances, and we have yet to hear of the company which prefers to have low rates when it has all it can do at high ones. But these favorable circumstances have suddenly changed. The traffic eastward is no longer sufficient to keep busy the rolling stock on hand. The different companies find that business does not come to them plentifully, and consequently they struggle with each other for it. In their struggles they are very apt to underbid each other, and then every agent feels at liberty to engage his company in a losing business for an indefinite period. In fact, the West is in very much the same condition as is common to the East: there is great competition for freight, and each company reckons itself fortunate to get something away from another.

Now, when this condition of things exists—when there is not nearly traffic enough to load all the cars—there is greater difficulty in the West than in the East in enforcing uniform tariffs and regulations, because there are a great many more companies there to harmonize. They have in their favor the fact that they are accustomed to maintain rates; but bad habits are easy to learn, and when ten companies with 20,000 empty cars compete for 10,000 car-loads of freight, some one is very likely to "make concessions," if he can't get a shipment otherwise. It is true that then more than ever the companies need full prices for their work, but the excess of the supply of transportation over the demand has for its natural effect to reduce rates, wherever competition is perfectly free, without regard to the cost of that transportation.

It is, however, false policy to reduce prices in that way. Reductions which increase the amount of traffic may be perfectly justifiable; but railroad men ought not to need to be told that a great many reductions are made which have no such effect. This was the case with the immigrant rates of the past year, which when reduced one half did not prevent a decrease of nearly one-half in the immigrant traffic; and doubtless westward shipments from Atlantic cities in the United States would not be much increased by any possible reduction of rates—nor very much decreased if rates were doubled. With eastward shipments it is different. If the railroads will carry at a rate considerably below cost they can get all the immense traffic which now goes by lake and canal; and if they will maintain such unprofitable rates for a series of years they will largely increase production. But any temporary reduction, however low, can do nothing more than add to the bulk of the rail shipments by taking something from the lake and canal boats. This, however, makes little difference with the railroad agent. He regards, not railroad traffic as a whole, but his company's share of it. Given fifty cars to fill, he sees that if he can fill them all at \$70 per car his company will do better than if he filled only thirty of them at the regular rate of \$100 per car, and so he is much inclined to divert a shipment from a competing line by offering the lower rate. Unfortunately for his company, two can play at that game, and, indeed, if one begins it every company is sure to take a hand, and the result is that the entire traffic which might have been had at the higher rate is all carried for the lower one, and every company gets just about the same proportion of the traffic as it would have at a higher rate. The companies are like the monkeys of which we read that each, when his dinner was on his plate before him, left it to steal something from his neighbor. Each got part of his neighbor's dinner, but each lost part of his own, and no one was the better for his thieving. The railroad companies, however, are so much worse than the monkeys that they spoil their dinners in the stealing of them, and so get no larger but much worse ones by their struggles with each other.

Aside from these difficulties, which arise from the number and eagerness of the competitors for business and the disinclination of so large a body with so varied interests to come to a binding agreement, there is the further objection that companies may have to a contract of the kind under which the Western Bureau acts. This objection may very well be aimed at its form, which, if reported correctly, is sufficiently clumsy and indefinite, though these defects may be of less moment in a contract not meant to be enforced by law; but they may also extend to the essence of the contract, which, as we understand it, consists chiefly of these three things:

1. That through rates shall always be the same by all routes.
2. That these rates shall be made by a Bureau of Commissioners, chosen by the associated companies, but independent of each one.
3. That these Commissioners shall have power to exercise authority over a class of all companies' servants, by dismissing or otherwise punishing them for violations of the contract.

Opposition is likely to be manifested most frequently to the last clause, and least frequently to the first. Companies are likely to be loth to give any outside party, even when they have a voice in choosing it, the least authority over any of its servants. This seems to them a personal matter which they do not care to reason about.

With regard to the making of rates, we presume that the assignment of such a duty to the Bureau has not been objectionable to many of those companies which unite in making rates, as most companies do and must. The character of the commissioners chosen has secured general confidence in their ability and fairness, and the work can probably be done better by a little committee of all the companies—which this Bureau is intended to be—than by a convention composed of delegates from each.

But, after all, it is the first thing mentioned—the absolute adherence of all companies to a fixed and uniform rate—which is the most serious obstacle to the success of the Saratoga agreement.

Under the title "A Phase of Competition," on page 424 of our last volume, (the number for October 31, 1874), we attempted to show how it is that certain routes with exceptional disadvantages (such as greater length or liability to blockade), really cannot afford to maintain rates as low as those of the shortest and best routes. It costs them more to do the work, it is true, but the goods they have to sell are of an inferior quality, and they cannot expect people to pay as much for them as for a better article of transportation. We may compare the short and the long line to two coal companies, one owning a mine of excellent coal, which can be mined for two dollars a ton, while the other's inferior coal costs three dollars a ton to mine. Now if the two companies agree to charge a uniform rate of five dollars a ton for their coal, evidently the one with the good coal will do all the business, and the other will sell no coal and make no profit. The latter will rather sell its coal for four dollars a ton, and so make a profit of a dollar, even though this profit be a very unsatisfactory one. It would very much prefer that its rival should charge six dollars a ton, so that it might sell at five; but it is essential to it that its price should be lower than its neighbor's. With the railroad company there is this difference that the inferiority of the route is rarely conceded, and the ostensible rate of the poor route is almost always the same as that of the best; but it gets traffic by making concessions on its regular rates, which frequently result in a reduction of the "standard" rate. As we showed in the article referred to, a company with an inferior line, in order to make a profit of \$30,000, may divert a business which would have been better done on the best route at so much less cost that it would have paid \$150,000 profit; and the effect of the reductions compelled by the inferior route in its struggle to make this profit of \$30,000 may be a loss on the total competitive traffic of \$770,000. The short route or routes could have done all the work at the prices actually paid by the community, have paid the inferior line the \$30,000 for the profit it could have made, and at the same time made a profit of four times that amount for themselves. Evidently the inferior line will not be doing its duty by its shareholders if it gives up the \$30,000 of profit without an equivalent, and evidently if it always charges as much as the best lines it will get little or no business and make no profit. We concluded that such lines would be unlikely to keep an agreement for uniform rates, unless its competitors would grant it some privileges in return, or be able to injure it if it refused.

Commenting on the article above referred to, a prominent railroad manager of great experience, and inclined to do full justice to the community and competing roads as well as to his own line, wrote to us as follows:

"I read with interest 'A Phase of Competition' in the Gazette of October 31.

"The business for which roads compete is now so large as compared with that for which there is no competition that this question has become very important, and on the proper solution of the problem depends the future value of many of the roads.

"Both at Saratoga and elsewhere, during the summer, I have urged combination as being, to my mind, the only practicable solution—a combination under which the net profits of the competing business shall be divided in an equitable, or if not that, in some agreed manner. Without some such division I think any arrangement will be short-lived, and indeed, many who were parties to the present agreement looked upon it as merely preparatory to something more radical.

"The reason for this belief is, that I cannot conceive how one line can have a very large preponderance of business against its competitors at sustained rates. If, in practical operation under sustained rates, one line does in fact get such preponderance, the other roads will be obliged to withdraw from the arrangement; and if any arrangements are really made in good faith with a view to a fair division of the business, then what objection can there be to an agreed division of the profits? On account of the interlacing of the roads this problem will be difficult to solve, but I think it is practicable if the Grand Trunk, New York Central, Erie, Pennsylvania and Baltimore & Ohio would all agree to it, it not as to the whole of the competing business, certainly as to a very large portion of it. Of course when there is such a

combination as this, the rates should be made reasonable. As it is now, most of the through rates are very unreasonable—unreasonably low—leaving upon the local business more than its fair proportion of the burden of sustaining the roads."

Doubtless the greatest obstacle to an arrangement of this kind is the public fear of a combination which, however much it might reduce the actual cost of transportation (as it might do considerably), would render the business less subject to competition. But this letter in its last clause also well states the public injury resulting from the present practice: it leaves "upon the local business more than its fair proportion of the burdens of sustaining the roads."

But to make a contract on the principle of guaranteeing the different roads their fair proportion of the traffic would be a most difficult task, and to make one which should appear just to all the competitors would be nearly impossible. And even if that were done, the difficulties will not be surmounted until there is an end to railroad construction. Everything may be settled satisfactorily for all the lines between New York and Chicago, when some fine day a new route by way of Knoxville or Mackinaw enters the field. Shall it be allowed a share of the profits, based on the bare fact of its existence? That would be equivalent to a standing offer of a yearly subsidy for every new competitor that may enter the field. And if it is recognized as entitled to a share, what shall that share be? No one can tell how much it can get until it has tried; and the new line will not hesitate to carry for less than cost in order to make itself known, get popular favor, and attract the established customers of the older lines. This is a common practice now, and it would be none the less so, doubtless, if profits were divided in definite proportions without regard to the actual amounts carried.

Indeed, the complications are such that it is very difficult to see how such a combination could be effected; and yet, there can be no doubt that one might be made that, if maintained, would reduce the first cost of transportation and make it possible to secure larger profits at lower average rates; and it is quite certain that when an insufficient profit is made on through traffic, the local traffic, when possible, has to make up for it. As things are, both the railroads and the community suffer. Just now the railroads are suffering to an unusual extent, and they are unusually anxious to prevent a waste of their resources. But exactly these circumstances make them unusually eager in competition and unusually obstinate in claiming all of what they imagine to be their special rights and privileges. If the meeting next Wednesday succeeds in settling the difficulties and causing harmony, it will do a good work; but we think that is more than can reasonably be expected. The subject is not one to be determined in a day or without much thought and negotiation. If a fair beginning is made, that will be a great deal. The chief trouble with the original Saratoga agreement seems to have been that it was not sufficiently discussed and understood before an effort was made to control transportation under it. We cannot settle problems so great and so complicated on the spur of the moment by inspiration, and it is best not to try.

The Grangers and the Railroad Law in Minnesota.

At a late meeting of the State Grange of Minnesota, the Master made a speech in which he complained that under the Minnesota railroad law enacted a year ago, which empowers a Board of Commissioners to fix rates on the railroads of the State, rates had been made higher than before in some cases, and he complained thereof of the Commissioners, one of whom, he said, should have been a farmer. Thereupon the State Grange passed the following resolution:

Resolved, That the present State law for the regulation of railroads is expensive and useless to the people and vexatious to the roads, and we demand its repeal, and in the name of 20,000 voters we demand the passage of a law that shall guarantee cheap transportation for the productions of the farm, especially wheat.

Subsequently, at a meeting of the County Council of the Grange of Dodge County, Gen. A. J. Edgerton, a member of the present Board of Commissioners and sole Commissioner previously, made a speech in answer to these charges which we would like to print in full as an example of the method in which the enactment of grossly unjust measures is openly boasted of, as it were, as giving a claim for the approbation of the people of a State.

Mr. Edgerton asserted that in no case had the Commissioners increased rates. The law required equal rates for equal distances on all parts of the same road, and in the case of the St. Paul & Pacific, whose section between St. Paul and Minneapolis has a large local traffic, the Commissioners could not make a rate low enough for that section without making it much too low for the western half of the road toward Breckenridge. "The evidence of citizens on the west end of the line showed that often there were only two or three passengers per train on the west fifty miles of the road. So the Commissioners allowed the old rate of five cents per mile to stand, and the company advanced its charge between St. Paul and Minneapolis to that rate." This company, by the way, has never earned the interest on its bonds since its road was completed.

Mr. Edgerton then proceeded to describe the action of the Commissioners with regard to the Winona & St. Peter Railroad, on which Dodge County is situated. Here, he said, they had reduced the fares from five to four per cent., and the freight rates on an average about 10 per cent., though as no account was taken of competitive points, some rates to these points might have been made higher. He showed that these reductions would probably reduce the company's gross receipts by about \$81,000, and would save the people on the shipments at the single station of Kasson \$6,769; and, as it might be objected that this reduction was not great enough, Mr. Edgerton further actually took pains to show that at the Commissioners' rates the working expenses of the road would probably be greater than its total earnings by \$30,762! "Now let me ask any reasonable man," says he, "if he would advise any greater reduction on this road till the results of a few months would demonstrate its possibility?" We should hardly think this a question for reasonable men either to make or hear. The net earnings of the road in question during the last year reported (and reported by Mr. Edgerton himself) were less than \$172 per mile, or only 7-10 of one per cent. on the Commissioners' own estimate of its cost—an estimate made for the purpose of showing that the roads were reported by their owners at too high a cost. On the actual cost to the company, the net earnings were less than one-half of one per cent.

Now here we have a State officer, whose business for years has been the collection of information concerning the railroads of the State, who knows and declares that a certain railroad has earned, at his own estimate of its cost, only one-fifteenth of the ordinary rate of interest paid in his State, who yet has adopted a rate for it which will take away even this miserable income, and who then defends himself before his fellow-citizens, not for making the rates so low, as one might suppose, but for not making them lower! We do not know what to be most amazed at: that there should be an official who does such things; that there should be one who confesses them; or that there should be a people to whom such a defence can be acceptable. "You are not a faithful servant," says a citizen. "I am a faithful servant," says the Commissioner. "I found this railroad which you use earning next to nothing; I reduced its rates so that it will earn less than nothing. It is a property which the owners say cost more than ten millions, but which I imagine did not cost much more than seven millions. Its owners made \$50,000 out of it last year; I have reduced its charges so that it will lose \$30,000 this year. I am a faithful servant." We should have hoped that the people addressed were not to be taken by such an appeal; but we find that after the speech the "County Council" adopted a resolution "that we have confidence in the ability and fidelity of the Railroad Commissioners."

It does not seem possible that there should be a civilized community where, as here, people should demand that the owners of railroads which have cost scores of millions of dollars should do their work for nothing—absolutely for nothing; and we would be justified in believing such people destitute of moral sense, if we did not know how hard it is for people to appreciate rights of property of which neither they nor any of their neighbors have any experience.

Chicago Stock Traffic.

The annual report of the Union Stock Yards and Transit Company, of Chicago, gives the following account of the business of the city in that line.

The receipts were:	1874.	1873.	Inc. or Dec.	P. c.
Cattle.....	843,966	761,438	Inc. 82,528	11
Hogs.....	4,258,378	4,537,750	Dec. 279,372	2
Sheep.....	338,655	291,734	Inc. 46,921	16
Horses.....	17,588	20,218	Dec. 2,630	13

The receipts and shipments in 1874 by the different routes were, in car loads, without reference to the kind of stock:

	Receipts.	Shipments.
Chicago & Northwestern.....	15,630	501
Chicago, Milwaukee & St. Paul.....	1,912	386
Chicago, Burlington & Quincy.....	44,785	470
Chicago, Rock Island & Pacific.....	21,891	922
Chicago & Alton.....	14,397	656
Illinois Central.....	17,483	623
Chicago, Danville & Vincennes.....	1,610	120
Pittsburgh, Cincinnati & St. Louis.....	586	68
Pittsburgh, Fort Wayne & Chicago.....	383	15,921
Baltimore, Ft. Abingdon & Chicago.....	13	13
Lake Shore & Michigan Southern.....	1,061	22,737
Michigan Central.....	581	17,299
Total car-loads.....	120,337	59,703

Here the railroads are arranged in regular order, beginning on Lake Michigan north of Chicago and turning the circle south and eastward.

It will be noted that nearly all the arrivals are from the quadrant from a radius extending due west to one extending due south of Chicago—from the southwest quadrant. The Chicago & Northwestern's Omaha line is the northernmost of the lines, and its chief stock traffic is from this line. The Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, the Chicago & Alton carry Texas cattle arriving from Kansas, and are also the chief stock carriers from Illinois, Iowa and Missouri. Of the entire receipts, nearly three-eighths came by the Burlington road, the Rock Island carrying 18 per cent., the Illinois Central 14½ per cent., the Northwestern 13 per cent., and the Chicago & Alton 12 per cent., leaving but 5 per cent. for all the other roads. The roads to

the east, naturally, carry next to nothing to Chicago. On the other hand they take nearly all the shipments, the Fort Wayne, the Lake Shore and the Michigan Central roads carrying nearly 94 per cent. of the whole, the Lake Shore leading with 38 per cent., while the Michigan Central has 29 per cent. and the Fort Wayne 26½ per cent. The latter has a favorable route for the Pittsburgh, Philadelphia, Baltimore and Washington markets, and for the city of New York; but the other two, while sharing the New York city trade, give the best outlets to the other cities of New York and to all New England.

The stock traffic east of Chicago is almost entirely a domestic traffic, except that a considerable number of hogs are carried to Eastern cities to be packed for export. Its extent and direction, therefore, depends chiefly upon the population and demand of the various cities, and it cannot be diverted like grain by the opening of channels to new seaports. The animals consumed in Philadelphia, New York and Boston will not be diverted to Baltimore or Montreal by any possible improvement of routes. The traffic west of Chicago is not so fixed, but like most of that traffic it originates on the ground, and can only choose between routes to reach the East. It can easily, however, change route, at least a large part of it can, and St. Louis within two years has become fitted to take a larger share than before of this traffic, and a share which has usually gone chiefly to Chicago. The completion of the bridge is perhaps even more advantageous in this respect than the extension of direct lines to Texas. These improvements, however, affect the traffic in horned cattle chiefly.

The following table gives the number of each kind of cattle received and shipped at Chicago by the principal routes:

	Cattle.	Hogs.	Sheep.	Horses.
Chicago & Northwestern.....	94,471	877,921	75,095	4,276
Chicago, Milwaukee & St. Paul.....	12,947	36,988	44,239	763
Chicago, Burlington & Quincy.....	328,560	1,511,839	94,128	6,484
Chicago, Rock Island & Pacific.....	129,546	870,565	34,900	2,229
Chicago & Alton.....	143,636	388,808	15,927	939
Illinois Central.....	94,180	719,631	39,825	2,437
Chicago, Danville & Vincennes.....	9,361	6,246	5,531	49
Pittsburgh, Cincinnati & St. L.....	4,319	20,716	6,421	22
All other routes.....	26,956	71,574	23,461	399
Total receipts.....	843,966	4,258,378	338,655	17,588

SHIPMENTS.

Pittsburgh, Fort Wayne & Chicago..... 194,351 | 432,094 | 47,641 | 2,624 |

Lake Shore & Michigan South..... 207,093 | 1,060,689 | 25,800 | 8,873 |

Michigan Central..... 156,370 | 800,237 | 94,465 | 3,796 |

All other routes..... 65,115 | 28,841 | 12,609 | 1,313 |

Total shipments..... 622,928 | 2,330,361 | 180,555 | 16,608 |

This will indicate the regions where the different kinds of stock are chiefly raised for market. However, considered as articles of traffic, sheep and horses are almost insignificant. The former are not only not very great in numbers, but they require very little room in a car.

The Chicago, Burlington & Quincy leads in every item, among the routes carrying to Chicago. By it were received 39 per cent. of the cattle, 35½ per cent. of the hogs, 28 per cent. of the sheep, and 37 per cent. of the horses. The Rock Island, which is next to it in car-loads received, is second in hogs, but third in cattle, having carried 20 per cent. of the former and 15 per cent. of the latter. The Illinois Central, third in the number of car-loads, is fifth in the number of cattle and third in hogs, and carried a trifle more than 11 per cent. of the former and 17 per cent. of the latter. The Chicago & Northwestern, the next in the number of car-loads, is fourth in cattle and hogs, but second in sheep and horses, the colder climate of most of its lines not excluding the production of the last two to such an extent as the first two. The Chicago, Milwaukee & St. Paul, for instance, with all its lines pretty well to the north, is third in sheep receipts, while bringing into Chicago hardly two train-loads of cattle. The Northwestern's share was 11 per cent. of the cattle, 14 of the hogs, and 22 per cent. of the sheep. The Chicago & Alton, fifth in car-loads, is second in cattle, with 17 per cent. of the whole, but it carried but 8½ per cent. of the hogs. It has less line than any other of the roads mentioned, but it gets a large share of the Texas cattle traffic and goes through the heart of perhaps the best stock district of Illinois.

An inspection of the corn receipts by different routes would show that the great cattle and hog roads are also the great corn roads; at least they lie within the great corn-producing district. But a little north of the latitude of Chicago the climate does not permit the profitable production of corn and cattle in competition with the more southern districts, where within the limits of a few States most of the corn and hogs which are marketed in this country are produced. Not that these cannot be produced in the northern district; they are largely, and the country supplies wholly its own demand and exports a little; but they are not leading products. The territory north of the latitude of Chicago, on the other hand, is the great wheat district, and the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul together carry (to Chicago and Milwaukee) usually considerably more wheat than all the other lines put together.

With regard to the shipments, the routes are not so numerous as to make much explanation desirable. The Fort Wayne is seen to be a great cattle route, having 31 per cent. of the total shipments, but it carries comparatively few hogs—about 18½ per cent. of the whole—this is owing largely to the fact, doubtless, that the other roads are the ones which lead most directly to the great Eastern packing houses. The Lake Shore, which leads, carried one-third of the cattle and 45 per cent. of the hogs.

The great value per pound of stock and stock products makes it probable that the production of these will go on increasing when grain production is made unprofitable by the distance to the market. Not only this, but a large part of the country west of the Missouri, now partly settled, is not fitted for anything else than stock-raising. Thus it is probable that this branch of traffic, already one of the most important to the roads of the West, is likely to increase both in absolute and relative importance.

Sea-board Grain Receipts.

The returns of grain receipts for the year 1874 at the chief exporting cities of the Atlantic give opportunity for such a comparison as will indicate what progress has been made in diverting the grain trade from New York—a subject concerning which a great deal is said now-a-days both east and west.

The table below gives the receipts of flour reduced to bushels and grain of different kinds in bushels at the four cities named:

	1874.	1873.	1872.	1871.
Boston.....	17,329,260	17,516,718	16,718,285	15,037,943
New York.....	107,017,536	94,137,971	90,930,336	82,543,673
Philadelphia.....	24,628,571	24,949,167	24,117,169	20,112,425
Baltimore.....	24,344,835	20,479,127	20,571,499	17,389,443
Totals.....	173,317,202	165,082,973	162,337,270	142,073,484

To show the relative rank of these sea-ports as grain-receiving ports, we give for each year the percentage of each one's receipts to the total for the four cities:

	1874.	1873.	1872.	1871.
Boston.....	10	11	11	11
New York.....	62	60	60	63
Philadelphia.....	14	16	16	14
Baltimore.....	14	13	13	12

If there is anything more striking than another in this, it is the remarkable evenness with which these ports have maintained their relative positions as grain receivers. The difference in the total amount of the receipts, which is governed chiefly by the production of the country and the foreign demand, has varied considerably, and was 22 per cent. greater in 1874 than in 1871; but while the aggregate receipts were thus greater by thirty million bushels, they were distributed in pretty nearly the same proportions in both years. New York has had from 60 to 63 per cent. every year, and last year a larger proportion than during the two years previous. Baltimore alone shows an uninterrupted tendency to increase its proportion; though the increase in bulk from 1871 to 1874 is seven million bushels, the increase in proportion is not great, for while Baltimore gained seven, New York gained seventeen millions, and evidently at that rate it will take a great while for New York to lose its pre-eminence as a grain receiver. If we observe the movement from 1873 to 1874, we have still greater difficulty in discovering New York's loss of rank. The proportion of total receipts is one per cent. lower at both Boston and Philadelphia, and two per cent. higher at New York. And if we take the gross quantities, the difficulty is magnified, for Boston and Philadelphia each took a few hundred thousand bushels less in 1874 than in 1873, and while Baltimore received nearly four millions more, the receipts of New York were greater by nearly fifteen millions.

Let not the reader hastily conclude, however, that these figures establish a tendency in the grain traffic, and show that tendency to be for New York to absorb it all. There are excellent reasons why the proportions of grain receipts at these ports should fluctuate, and we need not go far to find why New York should have gained more than other cities in 1874. New York alone is the terminus of the lake and canal route—the pre-eminently cheap route. In 1874 the rates by this route were low without example—unprofitably low. New York could profit by this; the other cities could not to anything like the same extent. Whenever lake rates are high, a larger proportion of grain is carried by rail, and rail rates are always three cents a bushel less to Baltimore and Philadelphia than to New York, while the two first-named cities have the further advantage of modern economical methods of handling the grain and conducting the trade. But when lake and canal rates are as low as they were last year, the railroads cannot carry a large amount of through grain to any seaboard city, unless they carry it at a loss—as they sometimes do.

The Toledo, Wabash & Western in Default.

The New York Evening Post of January 27 says: "We are at liberty to announce that the Toledo, Wabash & Western Railway Company will not pay its February interest, and that the directors have under contemplation a plan to fund the interest for a series of years. All things considered, this is probably the best method to follow."

The bonds upon which interest is due in February are: Toledo & Illinois first mortgage, \$900,000; Lake Erie, Wabash & St. Louis first mortgage, \$2,500,000; Great Western of 1859 first mortgage, \$2,496,000; Illinois & Southern Iowa first mortgage, \$300,000; consolidated convertible mortgage (quarterly coupon), \$2,700,000; making the total amount of principal \$8,896,000, and the interest due, \$246,110. The coupons on the consolidated mortgage gold bonds are also due, but the amount outstanding we do not know.

Coupons are also due in February on \$1,666,000 leased line bonds, as follows: \$2,700,000, Decatur & East St. Louis; \$1,200,000, (gold), Lafayette, Bloomington & Mississippi; \$666,000, (gold), Lafayette, Muncie & Bloomington. The amount of these coupons, reducing gold to currency, is \$171,610.

Record of New Railroad Construction.

This number of the Railroad Gazette has information of the laying of track on new railroads as follows:

Peach Bottom.—The Western Division has been extended from Cross Roads, Pa., east by south $6\frac{1}{2}$ miles to Forks of Muddy Creek.

Logansport, Crawfordville & Southwestern.—Extended from Clymer's Junction, Ind., where it formerly connected with the Toledo, Wabash & Western, northeastward 6 miles into Logansport. This part of the line was reported completed with the rest of it nearly two years ago.

Galena & Southern Wisconsin.—This 3-foot gauge road has been extended from Junction, Wis., northward 9 miles to Platteville.

This is a total of 21½ miles of new railroad, whether all completed this year or not we cannot now tell.

THE ILLINOIS STATE GRANGE has a Committee on Transportation, which on the 15th of January made a report, which the State Grange adopted. This report complains that the General Government has not done enough to promote cheap transportation to and from the Mississippi valley; asserts that a "tug monopoly" at the mouth of the Mississippi does much to drive traffic from that river, and suggests that "it may be working in the interests of the great railroad combinations;" recommends the immediate improvement of the mouth of the Mississippi and the construction of the Hennepin & Rock Island Canal; expresses the opinion that "more can be done by competition than by legislation," and that new competing railroads ought to be encouraged; says that the Committee is not prepared to recommend any subsidy to any route, "however well guarded may be its provisions against fraud, or grabs, or Credit Mobiliers;" recommends that the present Illinois railroad law should have a fair trial before anything is done to either alter or amend it, and recommends the adoption of resolutions which assert the deep interest of the Grange in the attempt made to control the railroads of the State by legislation; say that "while we freely concede to the corporations the right to a fair and just compensation for the services they perform, we are determined that the valuable franchises freely bestowed upon them by the people shall not be converted into instruments of oppression and injustice;" declare that they will "take no step backward" in this work; that they believe the present legislation to be based on sound principles, and that they are opposed to any change until the litigation pending concerning the validity of the law has been prosecuted to a final decision.

The State Farmers' Association of Illinois, which is a different organization, addressed the Board of Railroad Commissioners to know what obstacles prevent the immediate enforcement of the laws reducing rates; whether the laws are perfect, and if not what further legislation is necessary to attain the object aimed at; and also what there is to hinder the executive's suing out an injunction, as was done in Wisconsin, to prevent further violation of the law. The Commissioners reply that there are none but the ordinary legal obstacles to the enforcement of the laws, and that they have pushed the different test suits to trial as fast as possible; that as to the perfectness of the laws, they believe their principle to be sound and will accomplish the ends desired, and that they do not recommend any change at present; and that there is no law in Illinois under which an injunction could be had to prevent violation of the law. The Commissioners assert that they have labored diligently to secure the enforcement of the laws, but that they of course had to await the action of the courts in which the cases are pending.

The Committee of the Association reported that they believed the Commissioners to be "in sympathy with the industrial classes," and that all the authorities seemed to desire to enforce the laws; but they protested against the conclusion that the roads could not be enjoined from further violations of the law, and said that if there was no law for it there ought to be one.

THE NORTHERN CENTRAL, under its new management, which is so organized as to make it practically a division of the Pennsylvania Railroad, is about to enter upon an active competition with the Baltimore & Ohio for that share of Western business which may hereafter be attracted to Baltimore. Extended use is to be made at once of the terminal facilities already provided by the Canton Company, and arrangements are already being made for their extension by the erection of elevators, warehouses and new wharves. With better accommodations for the delivery of freight at its terminus, the capacity of the road for traffic will be largely increased, and there is apparently no reason why it should not be used. The Pennsylvania's line from Chicago to Baltimore is somewhat shorter than the Baltimore & Ohio and the former company is probably quite willing to secure its share of whatever may be gained by those superior advantages of Baltimore as an outlet for Western produce, of which so much has recently been said. There is possibly the further motive that a powerful rival can be better held in check or more easily brought to terms when an actual competition is established at both ends of the line, and at a point which has been hitherto peculiarly that rival's own. The coal traffic of the Northern Central, too, can probably be considerably developed with better means of handling, and there is talk of entering upon a closer competition for the large traffic of the Cumberland coal region, though there the Baltimore & Ohio has very much the advantage in distance, its line from Cumberland to Baltimore being 178 miles long, while the Pennsylvania's is 272, or over one-half more.

THE GRAIN MOVEMENT is extremely dull, and has been generally since the harvest. The figures reported under "Traffic and Earnings" shows a falling off of 7 per cent. in flour and 22 per cent in grain of all kinds for the crop year from August 1 to January 16. The falling off in wheat is just about one quarter, and in corn two-sevenths. The price of the latter is enough higher to make the smaller amount marketed this year worth quite as much as last year's shipments, doubtless; but the reduction in the price of wheat is as much as 20 per cent., and this year's receipts are probably worth not more than three-fifths as much as last year's. The former were worth about \$40,000,000 in New York; the latter about \$66,000,000. The difference will account for the greater dullness of business in the Northwest, which was much more prosperous than the rest of the country a year ago.

THE LACK OF TROUSERS is the latest complaint preferred against an English railroad company by its employees. One of them writes to a newspaper: "I think the Cambrian Company are again going to let their servants go without the pair of trousers they should have half-yearly. The trousers have

been due now since the first of December (according to custom), but they are not yet to hand." We fear that if the employees of some of our companies had to depend on the companies for their clothes, they would often be unrepresentable for months together.

FORTY THOUSAND DOLLARS would seem to be pretty good pay for being shaken, yet that is what an English gentleman got for a shaking received in a railroad accident some three years ago. His shaking, however, was rather a serious matter, for though it did not hurt him much at first, afterward it caused a nervous depression and irritability which seemed likely, when the case was tried, to disable him for six years.

NEW PUBLICATIONS.

Computations from Diagrams of Railway Earthwork.—By A. M. Wellington, C. E.; New York, D. Appleton & Co.; one volume of text and atlas of plates.

The present time is characterized as one of "labor saving," and to this end no class of men has contributed so much as engineers, and by them the question of saving their own labor has always been considered a matter of great consequence.

One of the most important duties of an engineer is the estimation of quantities of material for the purpose of information before deciding upon work not yet undertaken, and for payment upon work completed. To aid in the various processes, many tables of quantities have been constructed, and for no one material have more attempts been made to facilitate the work than for earth. Tables of earthwork are very common, and many very excellent ones have been prepared, some of which have been noticed by us; but we have now to record an entirely new step in the interest of this tedious and important business.

The work whose title is given above is in two volumes, one of text and one of plates. The former has a very good chapter of general preliminary explanations concerning the methods and ideas of diagrams and their use; a discussion then follows of the formulae for the usual methods for computing the volumes of earth, with a good deal of new matter therein, and the processes of constructing diagrams to obtain the results and also some new methods for finding the volumes of irregular and triangular sections, and for aiding the process of setting slope stakes. Mr. Wellington, by the way, seems to be the first person who has succeeded in making a practical use of the methods and formulae for earthwork in Henck's "Field Book," and his diagram for using them is exceedingly ingenious and very easy of application. There is another chapter which gives the forms of office notes and concerning the practical constructions of diagrams and an appendix with examples of application and comparisons of results; these are the leading topics of the book, which is finely bound and well printed in large type—a matter of interest to assistant engineers in the country, where light is scarce in the evenings.

The author's own description of his method, as given in his preface, is as follows:

"The nearest approach to this somewhat novel method of computing earthwork is found in the methods often used for graphically computing bridge-stations, and occasionally for preliminary estimates; both being based on Analytical Geometry. But there is the important difference in this case that no construction is required, or scaling of distances, the quantities being merely read off, as if from a table. Inaccuracy and delay are thus avoided, and the method becomes adapted to numerous and exact computations.

"The best description, in fact, which can be made of the diagrams is, that they are a series of CONDENSED TABLES; the only difference being that quantities are read off from lines instead of Arabic numerals, which, with a little practice, is equally convenient. The diagrams might be replaced by tables of the ordinary form, except for three reasons:

"First. The tables would be of vast extent; larger, indeed, than all those which have ever been made for earthwork computation put together.

"Second. It would be impracticable to secure accuracy in such extensive tables; whereas, in constructing a diagram, any error of importance becomes immediately evident.

"Third. Even if the tables were accurately constructed, they would be too bulky for practical use.

"These objections are self-evident, if the first be granted. To illustrate that point, let us take a single diagram, Plate I. It extends to about 29 feet center-heights, with a range in horizontal dimensions of 32 feet. Then to tabulate it, to tenths of each dimension, would require $290 \times 320 = 89,600$ quantities, equal to 155 pages of Trautwine's tables, or ten times as extensive a series of tables as all those given in that volume, which are for twelve different road-beds, and extend to 80 feet center-heights instead of 30 feet. Moreover, every point in Plate I. represents a tabular quantity, and this fact enables the range of the diagram to be readily quadrupled, which cannot be conveniently done with tables.

The plates are twelve in number, $14\frac{1}{2} \times 21\frac{1}{2}$ in. each (just about the size of the pages of this paper), and are excellent both in design and execution, clear and well defined. They are photo-lithographic reductions from the originals, and are a credit to all connected with their production. The most useful of these plates we take to be, as the author also does, the "End Areas" and "Triangular Prisms." The latter is a regular multiplication table, but of gigantic magnitude. But there are many other diagrams for preliminary estimates, and also for the "correction for curvature" and for "side-hill work," the latter being exceedingly ingenious.

In one thing more than all others do we notice a difference between this work and most of those treating on the same subject of estimates of earth, that instead of trying to modify any of the usual practice of field work for the sake of his system, Mr. Wellington has succeeded in adapting himself to it with what promises to be a very fair degree of success, and in the following particular especially. The favorite basis of our earthwork tables has always been the "prismoidal formula;" but the method most in use among practical engineers has ever been that of "end areas." No table has ever been constructed of this method, for the simple reason that it would be bulky and inconvenient; but this author has constructed a diagram for the use of the notes taken in the ordinary setting of slope stakes, and the only change made in their use is the

simple addition of the two slope stake distances giving the width between them. The first six plates are devoted to this purpose for the ordinary roadways and slopes.

The use and application of these diagrams is very easy and the results good. The saving in time is immense, and for ordinary purposes may be stated as follows: Accurate results may be obtained by the method of "end areas" in one-tenth of the time usually taken for computation of such work.

With the "side-hill work" still greater saving may be effected, and for Mr. Henck's method the results can be reached in about one-twentieth the time usually employed.

The mental labor involved in the use of these diagrams is of a much less fatiguing nature than even the use of an extended table, and the results are practically accurate. Mr. Wellington has shown a broad comprehension of and familiarity with his subject, and we consider the work alike a credit to the author and publisher.

The *Analyst*, the mathematical journal whose establishment we noticed a year ago, has begun a second volume. The January number has articles "On the Maxima and Minima of Algebraic Polynomials," "On the Solution of Cubic and Biquadratic Equations," "Additional Formule in Finite Differences," "On the Distribution of Primes," "Foliate Curves," "Determination of Root of n th Degree," "Odd Numbers and Even Numbers," a large number of solutions of problems, and eight problems for solution. Among the authors of articles in this number are Prof. David Trowbridge, Mr. G. W. Hill, Prof. W. W. Johnson, of St. John's College; Prof. W. W. Hyde, Dr. H. Eggers, Prof. C. M. Woodward, and others. The *Analyst* is a bi-monthly, of 32 pages, edited and published by J. E. Hendricks, A. M., at Des Moines, Iowa. The price is two dollars a year. It is still, we believe, the only mathematical paper in this country.

The *Engineering News* succeeds the *Engineer, Architect and Surveyor*, but is somewhat changed in form and character. It is a small quarto (9x12 in.) of 16 pages, very neatly printed, appearing monthly, at the low price of a dollar a year. The *News* purports to cover the whole field of engineering and architecture as well. Its predecessor was especially devoted to information for land surveyors, in which, so far as we know, it had no competitor in this country, and that field alone ought to sustain such a paper well. Mr. George H. Frost, a well-known engineer and surveyor of Chicago, is the editor and publisher.

The *St. Louis Railway Register* begins a new volume in a form like that of the *Railroad Gazette*, instead of its old folio sheet, having, with the advertisements, twelve pages. Besides its news of St. Louis and other railroads, the *Register* has a department of "Mines and Mining," and a page of market quotations—coal, metals and railroad supplies.

The *Railway World*, of Philadelphia, succeeds the old *United States Railroad and Mining Register*. The old paper had the good fortune for many years to have as its editor Prof. J. Peter Lesley, a most accomplished gentleman—an eminent geologist, an expert in topography, and an accomplished literary man. Professor Lesley never could give all his time to the paper, and his appointment as State Geologist of Pennsylvania a few months ago took him entirely away from it. The *Railway World* is almost entirely a new paper, with new form, new proprietors and new editors. It too (like all the American railroad papers but two) has adopted the form and size of page of the *Railroad Gazette*, having 16 well printed pages, whereof the first is devoted to financial discussions, the second to quotations of securities, the third to coal statistics and metal market reports, the fifth to mines and metallurgy—that is, in the number before us; and there is about a page of railroad news items, a legal decision, a number of letters, and a good assortment of other articles.

The *Road* is the title of a new fortnightly established by Mr. Thomas S. Fernon, formerly, we believe, President of the North Pennsylvania Railroad Company, and for a long time editor of the late *United States Railroad and Mining Register*. Mr. Fernon is very familiar with the history of most Pennsylvania roads and railroad men, is very decided in his opinions, and expresses them apparently without regard to hurting the feelings of those whom he criticizes, who are frequently very prominent managers or proprietors of railroads. The *Road* has 16 pages, each 9x12 inches. Its sub-title defines it as "a review of railways, iron arts and the coal trade; notes on corporation practice and finance, for investors," and we will not try to improve on that definition. Among the articles in the first number are "New York City and Her Ways to the West," "Overworked Locomotive Engineers," "Soft and Hard Coal Trade of Pennsylvania," "Successful Carriers of Anthracite," "California & Texas Railway Construction Company," etc. The paper is published at No. 52 Broadway, New York.

A *New Treatise on Elements of Mechanics establishing strict Precision in the Meaning of Dynamical terms, accompanied with an appendix on Duodenal Arithmetic and Metrology*: By John W. Nystrom, C. E.; Philadelphia, 1875. Porter & Coates (published for the author). Octavo, pp. 352.

The work before us proposes a radical change in technical nomenclature. The author has given numerous hints in regard to these changes in former publications, and now presents the matter in this complete shape, as he states in the preface, for the purpose of finally settling all uncertainty in the meaning of dynamic terms. We will endeavor to give a brief synopsis of the principal changes.

All such terms as *quantity of motion*, *mechanical effect*, *efficiency*, *quantity of work*, *energy*, *potential energy*, *kinetic energy*, etc., are to be no longer used, since they do not differ in meaning from the simple words *force*, *power*, *work*. We are no longer to speak of the "consumption of coal per horse-power per hour," which is nonsense, the author tells us, and in future are to use the expression, "consumption of coal per hour per horse-power." *Force* is an action which can be expressed simply by weight, and is independent of *space* and *time*; *power* is the product of *force* and *velocity*, and *work* is the product of *force* and *space*; or, since *space* is the product

of *velocity* and *time*, *work* is always dependent upon the *time*. To make the author's meaning a little clearer, we may say that if a weight of 100 pounds is raised to a height of 1,000 feet, it will be impossible to calculate the *work* performed, under the new nomenclature, unless the *time* is given—or, as he expresses it: "Work is thus dependent on time as well as on force and velocity; for without either one of these three elements it ceases to be work." Hereafter, we are to call the product of a *force* by its *lever arm* a *static momentum*, in place of the *moment* formerly used by so-called scientists; the product of the *mass* of a body by its *velocity*, is to be called a *momentum of motion*, and the product of *force* and *time* is to be called *momentum of time*. We are to have an entirely new word—*mass*—coined by the author, for the unit of mass, which, strange to say, is to be a weight, viz.: 32.17 pounds; and, stranger still, is to be at the same time a mass, viz.: the mass of 891 cubic inches of distilled water. Some of the scientists who are to be supplanted might assert that there is some little confusion in these distinctions.

We have, among other new things, a new definition of *stability*, which is said to be "that state of rest which cannot be disturbed by an infinitely small force;" also for *angular velocity*, which is "an apparent motion referred to a fixed center." Indeed, in regard to definitions, it would not be difficult to produce quite a number that would be decided curiosities for grammarians and novelties for precisians. It has been suggested to us that possibly Mr. Nystrom's lack of acquaintance with the distinctions of the English language may account for a great many of his novel expressions. At all events, when one considers the radical change that must take place in our modes of thought and speech before we can adopt Mr. Nystrom's dynamical terms and duodenal arithmetic, there would seem to be a great error somewhere, either on the part of Mr. Nystrom or of the English-speaking community. After a careful perusal of the work in question we are constrained to say that we think the most of what is good in the book is not new, and the most of what is new is not good.

General Railroad News.

OLD AND NEW ROADS.

Michigan Central.

This company has made public the semi-annual statement of the Treasurer, covering the six months ending with November 30, 1874.

The operations of the main line and branches for the six months were as follows:

Earnings	\$3,624,569.95
St. r. ly operating expenses (63.14 per cent.)	2,288,375.26
Net earnings	\$1,336,194.69
Interest account	754,051.88
Net receipts	\$582,142.81

Which is a little more than 3 per cent. on the capital stock.

The business of the branch roads has improved during the last half year, and the balances against them are as follows:

South Bend Division	\$6,021.81
Joliet & Northern Indiana	61,579.25
Grand River Valley	17,155.28
Kalamazoo & South Haven	12,101.51
Nunica Division	15,593.19
Jackson, Lansing & Saginaw	50,815.14

Total.....\$163,271.28

The bonded debt on the main line now amounts to:

First-mortgage loan, due in 1882	\$556,000
First-mortgage loan sinking fund, due in 1882	2,179,000
Seven per cent. consolidated loan, due in 1902	8,000,000
	\$10,735,000

From this amount must be taken the bonds of this company in the sinking funds, \$650,000, which will reduce it to \$10,085,000; and the sum in the sinking funds (not including the \$650,000 of the company's bonds), now amounting, at the par value of the securities therein, to \$1,059,303.61, will still further reduce it.

The bonded debts of the leased roads, which have been assumed by this company, are as follows, all bearing 8 per cent. interest:

Michigan Air Line	\$1,900,000
Grand River Valley	200,000
Kalamazoo & South Haven	1,500,000
Jackson, Lansing & Saginaw	710,000
	\$4,253,000

Total.....\$8,563,000

The company has also endorsed the bonds of the Detroit & Bay City Railroad to the amount of \$424,000.

The capital stock is the same as at the last report, \$18,738,204. The construction account amounts to \$27,210,167.07.

The floating debt, May 31, was \$1,056,452.77. November 30 it was \$259,525.86, showing a decrease during the six months of \$796,926.91. A note to the report states that during December the floating debt was further reduced by \$161,237.33, and amounted December 30 to \$98,288.53.

St. Louis & Southeastern.

It is announced that unpaid coupons of the first-mortgage bonds of the Evansville, Henderson & Nashville Railroad Company, which became due Jan. 1, 1874, will be paid on and after Feb. 1, 1875, at the Bank of America, in New York, or on presentation to Mr. John Boyle, Receiver, at Louisville, Ky. These bonds are on the Kentucky section of the St. Louis & Southeastern, and amount to but \$1,000,000, which is at the rate of \$10,000 per mile, requiring only \$700 per mile of net earnings to pay them.

Delaware, Lackawanna & Western.

Notice is given that the first mortgage bonds due April 1, 1875, will be paid at par and accrued interest on presentation at the company's office in New York. Interest will cease after April 1. The amount of these bonds outstanding is \$1,111,000.

Cincinnati, Wabash & Michigan.

The city council of Anderson, Ind., has voted \$10,000 city bonds to this company to aid it to extend its road into the city.

Wabash & Erie Canal.

The annual report of the trustees has been submitted to the Indiana Legislature. It notes the abandonment of the canal by the contractors for maintaining navigation (the Wabash & Erie Canal Company) after they had operated it for eight years. During that time the loss incurred was \$162,326, or more than the capital invested by the contractors. The rapid decay of the structures and the close competition of the rail-

roads, especially the Toledo, Wabash & Western, made it impossible to maintain the canal. Since the abandonment nothing has been done except to keep the property in as good condition as possible without incurring debt. The trustees think that if the canal is ever again opened for traffic it will be by some other means than those in the hands of the board.

A suit has been begun to enforce the lien of the holders of debt certificates against the trust property. The trustees are contesting this suit. The trustees hold assets amounting to \$97,353.

The Superintendent calls attention to the bad condition of the locks and bottom of the canal and certain aqueducts. The canal from Roanoke to the Ohio line was reopened June 2.

New York & Oswego Midland.

With regard to the proposed repeal of the law of last year which repealed the previous law exempting the road from taxation, it now appears that it cannot be done, on account of the amendments of the State constitution which were recently adopted. Had the original law exempting the road been allowed to stand, the amendments would not have interfered with it; but it was repealed and its re-enactment would be in the nature of special legislation, which is strictly prohibited.

An engineer writes to the *Utica Herald* to say that the strike recently proposed was the work of only a few engineers, and that the majority of the men disapproved of it and would have taken no part in it. The Brotherhood did not sanction the movement and had nothing to do with it.

Chicago, Dubuque & Minnesota.

The trustees, having begun to foreclose the mortgages in obedience to a requisition from a large number of bondholders, have called a meeting of the bondholders of this company and the Chicago, Clinton & Dubuque to consult with regard to their interests, and to the sale of the road. The meeting will be held in Room 7, Sears' Building, Boston, February 3, at 11 A. M.

In order to prevent misunderstanding the trustees state that the proposed contract with the Chicago, Burlington & Quincy and for the funding of certain coupons is not at all likely to be carried into effect.

Springfield, Jackson & Pomeroy.

The people of Springfield, O., have subscribed for \$80,000 out of \$100,000 allotted to that town, and more subscriptions are coming in.

Evansville, Owensboro & Nashville.

A meeting of the directors was held in Louisville, January 19, when it was decided to advise the stockholders to allow the road to be sold by the quickest legal process possible, in order to clear off the heavy load of debt and put it in the hands of parties who will complete it. The former plan of transferring the road to the creditors has failed, owing to the refusal of a number of them to join in it.

Henderson & Overton.

Work on this road has been begun near Henderson, Tex., and 120 convicts are employed on the grading. A larger force will be put on in a few days.

Rockford, Rock Island & St. Louis.

With reference to the claim made by certain parties that the bonds numbered from 1 to 5,000 were a prior lien on the property, the United States Circuit Court has ordered that all holders of bonds shall appear in the case on or before February 1, and submit their claims for adjudication. Failing to do this they will be deemed to stand on an equality with all other bondholders.

Union Pacific.

Suit has been begun by the Kansas Pacific and Denver Pacific companies against the Union Pacific, in the United States Circuit Court at Omaha, to compel it to pro-rate with the Kansas and Denver roads on all freight and passenger traffic. The suit is brought to obtain a final interpretation of the law on the subject of interchange of business between the companies.

Dividends.

Dividends have been declared by the following companies: Summit Branch, 8 per cent., semi-annual, payable February 15.

Cedar Rapids & Missouri River (leased to Chicago & Northwestern), 3 1/2 per cent., semi-annual, on the preferred stock, payable February 1.

Connecticut & Passumpsic Rivers, 3 per cent., semi-annual on the preferred stock, payable February 1.

United States Express, \$2 per share, quarterly, payable February 1.

Hanover Branch (of Massachusetts) 3 per cent., semi-annual, payable February 1.

Meetings.

The following companies will hold their annual meetings at the times and places given:

Eastern, in Boston, February 1, at 10 A. M.
Paducah & Memphis, at the office in Memphis, Tenn., February 17, at 12, noon.
Oil Creek & Allegheny River, in the Commercial Exchange building, Philadelphia, February 10, at 11 A. M.
Boston & Albany, at the office in Springfield, Mass., February 10.

Ogden & Salt Lake.

A company has been organized to build a narrow-gauge railroad from Salt Lake City, Utah, north to Ogden, where it will connect with the Union & Central Pacific and Utah Northern. It will be about 37 miles long, and will come directly into competition with the Utah Central, which is of standard gauge.

Baltimore & Ohio.

The United States Circuit Court has appointed Mr. Warren Colburn a commissioner to examine and report on the grade crossing where the Chicago Division crosses the Michigan Central at Lake Station, Ind. Mr. Colburn made an inspection of the grade crossing and adjoining sections of road last week, in company with the Chief Engineers of both roads. It is probable that he will recommend a bridge crossing, the expense to be shared equally by the two companies.

The winter tariff of rates from Baltimore to Western points went into effect January 20. The rates in cents per 100 pounds to leading points are as follows:

	1st.	2d.	3d.	4th.	Sp.
Cincinnati	72	64	52	45	31
Chicago and Milwaukee	80	71	59	51	37
Indianapolis	75	66	53	47	33
Louisville	93	83	68	61	45
Peoria	92	82	66	57	40
St. Louis	108	97	79	69	51
Wheeling	56	50	40	36	25
Cleveland	47	43	36	31	24

The increase in uniform with that made by the Pennsylvania and the other trunk lines, and is from 40 to 50 per cent. increase on the old rates.

Pennsylvania.

The committee of the Pittsburgh City Council to which was referred the question of rescinding the contract between the city and the Pennsylvania Railroad Company relating to the building of certain tunnels and bridges and the vacation of

certain streets, have resolved to report in favor of continuing the contract in force and extending the time for its completion by the company to January 1, 1876.

Notice is given that the second-mortgage bonds which mature March 31, 1875, will be paid at par and accrued interest on presentation at any time after January 20. Interest will cease from March 31. The amount of these bonds outstanding was \$4,865,840 by the last report.

The tunnel between Elizabethtown, Pa., and Mount Joy will soon be replaced by an open cutting, which is about 850 feet long and 60 feet deep.

Grand Trunk.

This company invites proposals for the supply of steam coal needed during the present year and up to May 1, 1876. The quantity required and the places where it will be needed are as follows:

At Toronto, 20,000 tons, to be delivered in the company's yard during navigation.

At International Bridge, Black Rock, 64,000 tons, to be delivered by rail in monthly installments from March 1, 1875, to May 1, 1876.

At Detroit, 10,000 tons, by rail, in monthly installments from March 1, 1875, to May 1, 1876.

Proposals must designate the name or kind of coal to be furnished and be addressed to Joseph Hickson, General Manager, Montreal. They will be received up to February 13.

Hamilton & Northwestern.

This company advertises for sealed proposals for the works required in the construction of the road from Hamilton, Ont., to Barrie, and from Clarksonville to Collingwood, about 127 miles in all. The furnishing of the rails, spikes and bolts is included. Plans and specifications can be seen in the Chief Engineer's office, in Hamilton, Ont., after February 1. Proposals should be addressed to Maitland Young, Secretary, Hamilton, Ont., and will be received up to February 23.

Virginia Railroad Commission.

Two bills are before the Virginia Legislature, one constituting the Governor, Treasurer and Secretary of State a board of "Commissioners of Transportation," with power to supervise and regulate the railroads of the State. The other, which is a substitute for the first, provides for the appointment of a competent person, who is not a stockholder, officer, trustee, assignee, lessee or employee of any railroad company, as Railroad Commissioner, to have supervision of all the railroads of the State and to require from them annual reports.

The International and the Texas Aid Bonds.

A bill has been introduced in the Texas Legislature for the settlement of the controversy between the State and the International Company. The provisions are very much the same as those of the act of last year, except that the issue of bonds is limited to \$3,500,000, or \$200,000 less than last year's bill, and that provision is made for retaining \$500,000 of the bonds in the State treasury until the road is finally completed from Jefferson to San Antonio. It is stated that the company is willing to accept the present bill, the action of which is positive and will not depend on any decision of the courts, as did last year's bill.

Lake Superior & Mississippi.

The decision of the Minnesota Supreme Court as to the unconstitutionality of the charter of this company was based upon the provision of the State constitution which prohibits all special charters. The act under which the company was formed was passed in 1861 and purported to be an amendment of an act passed in 1857 by the Territorial Legislature, before the formation of the State government, chartering the Nebraska & Lake Superior Company. The Court holds that the act of 1861 differs from that of 1857 in such manner that it is really a new act and not merely an amendment and therefore comes within the constitutional prohibition.

The Court intimates that if the company's counsel think that the case may be presented in a different light, the Court will not object to granting a re-hearing in the case.

Missouri Railroad Taxation.

In the injunction suits brought by a number of the Missouri companies to restrain the collection of taxes, some months ago the Court made an order requiring payment of 62 per cent. of the tax in order to entitle the roads to a hearing on the question of excessive assessments, and meantime issued an injunction on condition that the order was complied with and the payments made. It now appears that all the companies have complied with the order and paid the 62 per cent. of the tax except the Missouri Pacific and Atlantic & Pacific. The officers of these roads refuse to comply, and it is reported that steps will immediately be taken to enforce payment by seizure, as the injunction will not hold if the conditions of the order are not complied with.

Peach Bottom.

The Western Division is now completed from York, Pa., east by south to the Forks of Muddy Creek, which is 23 miles from York and 6½ miles beyond the late terminus. The grading is completed for 14 miles further, and a force is at work finishing up the remaining two miles to the Susquehanna at Peach Bottom.

Great Western.

A lively competition is going on just now between this company and the Grand Trunk for passenger business between Buffalo and Detroit. The first-class fare was reduced from \$7 to \$5, and the second class from \$5 to \$4, but subsequently further reductions were made until, at least on accounts, tickets were selling at \$2.50 and \$3.50. The Lake Shore has not yet taken any part in the reduction.

New York Central & Hudson River.

The new stock yards at the foot of Sixty-third street in New York are nearly ready for use and will soon be opened. They extend from Sixtieth to Sixty-third street and from Eleventh avenue to the North River, and cover about 10 acres. It is proposed next season to add about six acres more. The yards are substantially built, are paved with stone block pavement, thoroughly drained and sewered and provided with the necessary facilities for feeding and watering. There are receiving, selling and storing yards, with the necessary stables, offices and weighing scales. There is also a large and convenient hotel for the accommodation of drovers.

New York Elevated.

This company gives notice that it will receive at its office, No. 7 Broadway, New York, until February 8, sealed proposals for all or any part of \$500,000 of the first mortgage convertible 7 per cent. bonds of this company, in sums of \$1,000 or any multiple thereof.

Terms of payment: Five per cent. of the amount bid to accompany proposals, for which certified checks may be enclosed, which will be returned to bidders February 8, unless the bid is accepted; 20 per cent. February 15; 25 per cent. March 1; 25 per cent. March 15; and the remaining 25 per cent. April 1, next.

Burlington & Southwestern.

The Burlington (Ia.) *Hawkeye* says: "General Baker, as Receiver of this railroad, appointed by Judge Dillon, of the United States Circuit Court, and approved by Judge Love, will appear at Ottumwa, at the Wapello County District Court, and make formal demand of possession of the road. This will raise the question of jurisdiction of the State and Federal Courts in this matter. The District Court for Wapello County

has appointed a Receiver of the road both in Iowa and Missouri, and, as we understand it, even in Iowa, outside of its own district. As there can be no question as to the jurisdiction of Judge Dillon in Iowa and Missouri, it is very probable the State Court will recede from its position, and General Baker be put in possession."

Missouri Railroad Commission.

A bill has been introduced in the Missouri Legislature which provides for the appointment of five railroad commissioners, who are to have very much the same powers as are given by the Wisconsin law, except that their authority is to extend over warehouses and telegraph and express companies. The offices are to be in St. Louis and the expenses of the commission are to be paid by a special tax on the companies.

Pennsylvania-New York Division.

Notice is given that after January 25 all freight to and from stations between Jersey City and New Brunswick, including New Brunswick, will be received and delivered in New York at Pier No. 16 North River, instead of Pier No. 1, as formerly.

Canada Southern.

The transfer boat used to carry passenger and freight cars across the Detroit River at Trenton, is frozen fast in the middle of the river and thus far the efforts to release her have been unsuccessful. It is feared that the boat will be laid up several weeks causing much delay and embarrassment.

Cleveland, Mount Vernon & Delaware.

At a special meeting of the stockholders in Mount Vernon, O., January 20, it was unanimously voted to increase the capital stock from \$1,000,000 to \$5,500,000, and to authorize an issue of \$1,200,000 income bonds.

The company has concluded an arrangement with the bondholders, who are mainly in Holland, by which one-half the coupons for 10 years from January 1, 1875, are to be funded in income bonds, the other half being paid in cash as they mature. A part of the issue of income bonds is to be used in settling the company's indebtedness to the Pennsylvania Company.

Delaware, Lackawanna & Western-Morris & Essex Division.

A survey is being made for a new line for the proposed spur into Paterson, which has been talked of for some time past, and for which a line was surveyed two years ago. The former line left the track of the Boonton Branch in South Paterson and entered the city from the south; the one now surveyed enters it from the west. The Boonton Branch skirts around Paterson but does not enter it, and the spur into the city will very probably be built, at any rate after the new tunnel through Bergen Hill is finished. The present agreement under which the company uses the Erie tunnel prevents it from entering into active competition for Paterson business, but when the new tunnel is done this restriction will be removed.

A Southern Railroad Meeting.

An adjourned meeting of Southern Railroad managers was held in Atlanta, Jan. 7, to complete the arrangements made at the previous meeting for uniform rates and a division of business. The agreement made at the December meeting was ratified, and a committee of five appointed to adjust all differences. It was resolved that the tariff of May 12, 1873, on South-bound freights should be adopted, to take effect Feb. 1.

Ohio & Mississippi.

The Indianapolis, Cincinnati & Lafayette having put on a through train between Cincinnati and St. Louis in connection with the Vandavia Line, the Ohio & Mississippi has reduced the fare between the two cities to \$5, and there is a prospect of a lively competition for a short time. A similar reduction has also been made between Louisville and St. Louis, a through car between those cities having been put on by the Jeffersonville, Madison & Indianapolis and the Vandavia Line.

Mattoon & Grayville.

A contract has been let for the construction of this projected road from Mattoon, Ill., south by east to Grayville on the Wabash, 40 miles below Vincennes. The road will be about 90 miles long and is to be finished in 18 months, provided the funds are forthcoming.

East Tennessee, Virginia & Georgia.

The board of directors has appointed a committee of five to negotiate with the Cincinnati Southern trustees with respect to the use of a part of the East Tennessee road from Knoxville to Chattanooga by the Southern road. The committee is authorized, it is said, to negotiate for a sale of the part of its road required, in case the Knoxville route is adopted by the Southern.

Atlantic & Lake Erie.

A contract for the construction of the road has been concluded and will be presented to the stockholders for ratification at a meeting to be held in Bucyrus, O., February 8. The contract provides for the construction of the road in sections, the first being from Newark to Mount Gilead, and then from Mount Gilead to Bucyrus. The road when completed is intended to run from Toledo to Pomeroy on the Ohio River, 225 miles.

Galena & Southern Wisconsin.

Trains are now running regularly to Platteville, Wis., 30 miles from Galena and nine miles north of the late terminus.

The Western Railroad Bureau.

The Indianapolis *Journal* says of the meeting at Cleveland, January 20: "General Geo. B. Wright, Chairman of the Western Bureau of Railway Commissioners, returned from Cleveland yesterday. From him we learn that the meeting was harmonious and effective. The object for which this meeting was specially called was to bring the Commissioners and railway managers into closer communion, that they might learn each other's views and better understand the motives that had governed the Commissioners thus far. The real sphere of the Commission is to regulate freight and passenger tariffs, to cut off commissions and reduce expenses, and to be a sort of board of arbitration. After several hours of consultation together the board adjourned until Feb. 3, without taking any progressive or retrogressive action. The next meeting will be held in New York, at which the Eastern and Western bureaus hope to meet the managers of the principal roads of the country. At the Cleveland meeting the following Commissioners were present: George B. Wright, of Columbus, President; Warren Colburn, of Toledo; John S. Newberry, of Detroit; E. B. Wadsworth, of Chicago; and L. N. Andrews, of Indianapolis. The following roads were represented: Atlantic & Great Western, Toledo, Wabash & Western, Cleveland, Columbus, Cincinnati & Indianapolis, Indianapolis, Bloomington & Western, Terre Haute & Indianapolis, Lake Shore & Michigan Southern, Cleveland & Pittsburgh, Pittsburgh, Fort Wayne & Chicago, Pittsburgh, Cincinnati & St. Louis. The Indianapolis, Cincinnati & Lafayette Company has formally withdrawn from its adherence to the Saratoga agreement. It is understood that the reason for this action is that a considerable portion of its business passes over the Baltimore & Ohio or its allied lines.

The Michigan Central has, it is said, been reducing rates from Chicago east, and other companies have been accused of doing the same thing. It is also reported that the Grand Trunk is about to make a heavy reduction in its rates from

Chicago to Portland and Boston. Contracts have been made at 35 cents per 100 lbs. on fourth class from Chicago to New York.

Burlington & Northwestern.

Meetings are being held to advocate the construction of a narrow-gauge railroad from Burlington, Ia., northwest about 50 miles to Washington.

A Yard-masters' Convention.

The Yard-masters' Mutual Benefit Association of Indianapolis has issued a call for a convention to be held in Indianapolis, February 24, for the purpose of forming a Yard-masters' National Insurance Association.

Cairo & Vincennes.

The receivers have let a contract for the construction of an inclined plane and landing stage, which is to be located in the northern part of Cairo and on the Ohio river side of the city.

Leavenworth, Lawrence & Galveston.

A bill to foreclose the first mortgage on this road was filed in the United States Circuit Court for Kansas, January 21, by J. D. Campbell, of Davenport, Ia.

Quincy, Missouri & Pacific.

It is proposed to consolidate this company with another which intends to build a new line from Quincy to Chicago, the consolidated company to be called the Chicago, Quincy & Western. The city council of Quincy, Ill., which owns \$500,000 stock in the company, has consented to the consolidation. The road is now 68 miles long, from West Quincy, Mo., to Kirksville.

Forced Sales of Securities.

At an auction in New York, January 20, Terre Haute & Richmond Railroad shares were sold at 126½; Evansville & Crawfordville 7 per cent. bonds at 95½; Sixth Avenue (street) Railroad shares at 154; Delaware & Hudson 7s of 1884, registered, at 105½; Chicago & Alton 1st mortgage 7s of 1893 at 106½; Illinois Central redemption 6s due 1890 at 95½; New York & Harlem sinking fund 7s, due 1881, at 104½; Warren Railroad shares, 7 per cent. dividend guaranteed by Delaware, Lackawanna & Western, 89½ to 90; St. Charles Bridge 10 per cent. bonds at 82.

Yadkin River.

A proposition for an issue of \$50,000 in town bonds in aid of this road has been submitted to the people of Salisbury, N. C. The road, which is to be the North Carolina section of the Cheraw & Salisbury, is to run from Wadesboro, on the Carolina Central, northwest up the valley of the Yadkin to Salisbury, a distance of about 55 miles.

New England Freight Agents' Association.

The annual meeting was held in Boston January 20, but no business of special interest was transacted.

Maine Central.

Negotiations are pending for a business contract with the Portland & Rochester and Nashua & Rochester companies similar to that recently concluded with the Boston & Maine.

Mr. Hatch has retired from his connection with the company in view of its changed relation with the Eastern.

Michigan & Ohio.

The officers of this company are traveling through Ohio, holding meetings along the line of the road. They ask for the right of way and donations of \$5,000 per mile. They state the intention of the company to build a double-track road with steel rails from Grand Haven, Mich., to Portsmouth, O., and claim to have negotiated a loan of \$7,000,000. They have not thus far been very successful in Ohio, the people appearing to put but little confidence in the representations made.

Springfield & Illinois Southeastern.

The exceptions heretofore made to the foreclosure sale have been withdrawn, and the sale was confirmed by the United States Circuit Court, January 18. The Receiver was discharged and the deed and possession of the road delivered to the representatives of the purchasing bondholders. The management of the road will remain the same, Mr. Beecher, the late Receiver, having been appointed General Manager.

Illinois Central.

This Company and the Chicago & Northwestern have made a new joint tariff on freight between Chicago and Sioux City. The rates are as follows: First class, \$1.10 per 100 pounds; second class, 85c; third class, 70c; fourth class, 50c; special class, 45c; grain (except corn and oats), in car-loads, 40c; corn, oats and mill-stuffs, in car-loads, 35c; flour and corn-meal, in car-loads, 80c per barrel; lumber, per car, \$70; horses, per car, \$90; cattle and hogs, \$80; sheep, \$70; class A, per car, \$100; class B, \$80; class C, \$70.

Atlanta & Richmond Air Line.

The matter of the Receivership was argued in the Superior Court at Atlanta, Ga., Jan. 22, upon a petition from Mr. J. H. Fisher, the Receiver appointed by the United States Circuit Court, asking the state Court to reconsider its appointment of L. P. Grant as Receiver in Georgia. The Court refused to grant the petition, on the ground that the transfer of the road to Mr. Fisher might jeopardize the rights of some of the parties in litigation.

Both the Trustees under the first mortgage have made the necessary assignment to Mr. Fisher.

Iowa Southwestern.

The contractors are at work driving piles and making ready for the bridging from Clinton, Ia., west to the Davenport & St. Paul crossing.

The Empire Line.

A correspondent of the New York *Tribune* has given the following account of the history and working of this well-known fast freight line:

"The Empire Line still maintains its separate existence. This company has not been absorbed because the Pennsylvania Railroad finds that there is a profit in continuing business relations with it. The line is advantageous to the railroad because it diverts freight at Erie to the Pennsylvania Company's Philadelphia & Erie Branch which would otherwise go on to New York by either the Central or the Erie. The main object in view when the Empire Line was established was to open a through freight line from New York to the West by way of Erie. The Anchor Line was organized as its lake ally, and a line of steam propellers was put on the route between Erie and Western lake ports. After a time the Empire Company bought the stock of this line and now wholly controls it, owning large docks at Erie and a fleet of 18 steam and sailing vessels. The name of the Anchor Line is still maintained, but its corporate existence is entirely merged in the other company. The capital stock of the Empire Company is \$4,000,000. It owns 4,500 cars, has contracts with 5,310 miles of railroad, and business arrangements with 16,040 miles more. Its earnings amount to about \$11,000,000 a year, and its dividends are 10 per cent. per annum. In 1873 it sent East, over the Pennsylvania Railroad, 952,787 tons of competitive freight. It is a powerful competitor for the business of transporting petroleum, having about \$1,500,000 invested in pipe lines in the oil region of Western Pennsylvania. It runs its own cars over the Pennsylvania Railroad from Erie to Milton; over the Philadelphia

Reading Railroad from Milton to Quakake; over the Lehigh Valley from Quakake to Phillipsburg, N. J., and over the Central Railroad of New Jersey from the latter point to New York. From Erie westward it has contracts with the Lake Shore & Michigan Southern and the Chicago, Burlington & Quincy railroads. It also runs cars from Cleveland to Indianapolis over a line controlled by the Erie Railroad. It will thus be seen that it has business arrangements not only with the Pennsylvania road, but also with its two great rivals, the Erie and the New York Central. Unlike an express company, and unlike the transportation companies first organized on the Erie and Central roads, the Empire does not make rates with shippers. That falls solely within the province of the railroad companies, the fast freight line never deviating from their rates. The profits of the line are derived, first, from a car service allowance for the use of its cars; second, from a commission of from 5 to 10 per cent. on the business it brings to the roads. The line takes all the risks of collection; pays the salaries of solicitors and agents; maintains terminal depot facilities, and relieves the railroad companies of much expense and trouble. It occupies the position of a joint agent for the various companies, serving them for a fixed commission on rates established by them.

Chicago & Alton.

An order has been issued to freight agents to the effect that hereafter rates on grain shall be the same to elevators, mills and warehouses as for track delivery. Hereafter it has been customary to make an additional charge of three cents per 100 pounds on all grain not delivered on track.

The company is making an effort to compete with the Illinois Central for freight and passenger traffic from Chicago to the South. Increased accommodations are to be given and possibly rates will be cut down. The company and its Southern business by way of St. Louis and over the St. Louis, Iron Mountain & Southern and Mobile & Ohio roads.

Cincinnati Southern.

The bridge to be built over the Ohio River is to be in all 1,593½ feet in length and a wrought-iron truss bridge throughout. Starting from the Kentucky shore there is first a fixed span of 110 feet, then a draw span 367½ feet, then the channel span, 519 feet, and, last, two fixed spans of 300 feet each. The channel span will be 106 feet above low-water mark and 43½ above the high-water mark of 1832. The approach on the Kentucky side will be an earth embankment and on the Ohio side an iron trestle.

Eleven bids were received for the bridge, which were as follows:

	Price.
H. C. Ruggles & Co., Cincinnati.....	\$1,088,000
Baltimore Bridge Company, Baltimore.....	955,000
Detroit Bridge Company, Detroit.....	847,000
Clark, Reeves & Co., Philadelphia.....	786,270
Soulerin, James & Co., Milwaukee.....	780,000
McNairy & Claflin, Cleveland, O.....	675,000
American Bridge Company, Chicago.....	672,500
Kellogg Bridge Company, Buffalo, N. Y.....	664,000
Keystone Bridge Company, Pittsburgh.....	663,570
Thomas Lighton, Rochester, N. Y.....	638,000
Watson Manufacturing Co., Paterson, N. J.....	593,000

In defense of the policy of building a new bridge, it is stated that the Newport & Cincinnati Bridge Company asked \$750,000 for the use of its bridge, while the additional cost of building the road on that line was estimated at \$623,000, besides \$50,000 for altering the approaches to the bridge at the Newport end.

Logansport, Crawfordville & Southwestern.

A six mile extension has been completed from Clymer's, Ind., to Logansport. The track of the Toledo, Wabash & Western has heretofore been used between those points.

Smyrna & Delaware Bay.

The American Dredging Company, of Philadelphia, which bought this road at Sheriff's sale last Spring, has sold it to Jay Gould, who now owns it in fee simple. All the outstanding judgments have been satisfied. The road is about 16 miles long, from Bombay Hook, Del., west to Massey's, Md., and has never been worked, though the rails have been laid over a year.

North Brookfield Branch.

The company which is to build this road has been fully organized. The line is to be about four miles long from North Brookfield, Mass., south by east to the Boston & Albany at East Brookfield.

Morris & Essex.

A new consolidated mortgage for \$25,000,000, in which it is intended to fund all the outstanding funded debt, which is about \$14,000,000, has been executed to the Farmers' Loan & Trust Company as trustee. Under this mortgage \$3,000,000 new bonds have been issued and have all been taken by Drexel, Morgan & Co., Winslow, Lanier & Co., and J. S. Kennedy & Co. The bonds are guaranteed by the Delaware, Lackawanna & Western and the proceeds are to pay for improvements now in progress.

Lima & Pisco.

A correspondent in Lima, Peru, writes to us as follows, under date of Dec. 14:

"Preparations are now being made to commence work on this road. The Chief Engineer arrived in Lima about the middle of November to have the definite surveys put under way as soon as the necessary arrangements could be made. The most of the stock is subscribed for in London by the stockholders of the railways in present operation from Lima to Callao (its seaport) and from Lima to Chorrillos—a seacoast resort for the people of Lima.

"This road will follow the Pacific coast southward from Lima, crossing the valleys of Surco, Lurin, Chilca, Canete and Chincha, having stations at the principal towns and haciendas of Surco, Lurin, Chilca, Cerro Azul, Tambo de Mora, Santa Barbara, Canete and several other places of minor importance.

"Between the valleys that empty into the Pacific the route is across rocky or sandy wastes. Generally the work is light, with an occasional piece of heavy work. It is about 140 to 150 miles long, and will cross many productive valleys, at present among the richest wine and sugar-producing districts in Peru.

"The Government agrees to loan the company \$2,600,000 in special bonds, and guarantees the bonds of the company to the same amount, requiring the company to furnish a cash capital of \$2,600,000, and to offer stock to the public to the amount of \$1,600,000, making an estimated cost of the road to be \$9,400,000."

Lima & Oroyo.

An American engineer in Lima writes to us as follows: "An item of American enterprise and ingenuity may be noted in the lighting by gas, made from crude petroleum, of the Galera or 'summit' tunnel of this road. Crude petroleum abounds in the northern part of Peru near Tumbes and Nigritis. The supply of cheap petroleum for use in the country is therefore unlimited. The apparatus for making the gas from the oil (a modification of the Rand patent) is erected at the west entrance to the tunnel, which is near three-fourths of a mile long and 15,650 feet above sea level. It was put into successful working nearly two months ago, and is estimated to have saved at least \$100 per day since. At that elevation the lamps burned badly (the air being so rare), the tunnel

was intensely full of smoke by their imperfect combustion, the dumping cars were frequently off the track for want of sufficient light to operate the running of them properly, and there were many other disadvantages due to bad light that are now obviated.

"Fifteen gallons of crude petroleum per day lights the tunnel perfectly, and the apparatus paid for itself in a month.

"The tunnel now lacks (Dec. 28) 450 feet of having the headings meet."

Intercolonial.

The agitation for a reduction of the tariff on freight is spreading, and excites general interest in the Maritime Provinces. The Halifax Chamber of Commerce and the St. John lumbermen and mill owners have taken it up and appointed committees to urge upon the Government the necessity of a reduction. The lumber interests of Western Nova Scotia and Eastern New Brunswick and the lime-stone quarries, brick-yards and tanneries about Shubenacadie and Elmsdale are the interests particularly affected. In fact, nearly all the local traffic of the old part of the road is in coarse and heavy freights, of whose cost the money paid for transportation forms an important part.

Wisconsin Railroad Law.

The officers of the Northwestern and Milwaukee & St. Paul companies held a conference in Chicago, January 20. It is reported that the object was to agree upon some measures to secure a modification of the Potter law.

It is said that a bill has been prepared in accordance with the opinions of Governor Taylor, and that it will soon be brought before the Legislature. This bill is said to be very long, containing many provisions but the amount of it is that the Railroad Commission is to have power to adjust the rates of fare and freight and to fix minimum charges for each road. A strong attempt is to be made to secure the passage of this bill.

The Hoosac Tunnel Line.

The Fitchburg Railroad Company has made arrangements with the Troy & Boston Company and the contractors who are rebuilding the Troy & Greenfield road for the transportation of its cars. Further arrangements are being made with the New York Central & Hudson River for through rates, and the company will shortly establish a through line between Boston and Chicago by way of the Hoosac tunnel.

Peoria & Rock Island.

The United States Circuit Court has appointed Mr. John B. Hillard, now General Superintendent, Receiver of this road in the suit brought by the bondholders.

New Jersey Midland.

It is reported that a number of landholders along the line, who have not yet been paid for the right of way, are about to unite and endeavor to make a settlement with the company. They do not wish to take extreme measures or to embarrass the company, but they want a final settlement on some equitable basis.

Hannibal & St. Joseph.

The Trustees under the Land Mortgage of 1863, in accordance with the provisions of that mortgage, invite proposals for the sale to them of \$50,000 of the bonds issued under it. Proposals will be received up to noon of Feb. 2, and must be directed to Wm. H. Swift, at Ward, Campbell & Co.'s, No. 56 Wall street, New York, or to the Trustees, care of Chas. Merriam, agent, No. 26 Sears Building, Boston. The proposals will be opened in Boston, Feb. 3, and the result declared.

Canadian Pacific.

The Department of Public Works of the Dominion of Canada invites proposals for the grading and bridging of a section of 45 miles of this road, from the town plot of Fort William, near Thunder Bay, Lake Superior, to Lake Shebandowen. Plans, specifications, forms of tender and other information can be obtained on application to the office of the Engineer-in-Chief, Ottawa. Proposals will be received until Feb. 27, and should be addressed to F. Braun, Secretary Department of Public Works, Ottawa, Canada.

The plans and specifications for that part of the line between Lake of the Woods and Red River will be ready in two or three weeks.

St. Louis & Southeastern.

Notice is given that the coupons on Evansville, Henderson & Nashville first-mortgage bonds, which became due January 1, will be paid February 1, with 6 per cent. interest to that date, on presentation at the Bank of America in New York, or to St. John Boyle, Receiver, at Louisville, Ky.

Kansas Pacific.

This road has been suffering from a snow blockade of unusual severity and duration. Traffic was almost completely stopped from January 4 to January 18, and on the latter day an express train reached Denver eleven days behind time, having been 13 days on the road. The weather was very severe and the passengers suffered somewhat, though not as much as might have been expected. The worst trouble was on the Smoky Hill Division on the plains of Western Kansas.

A suit has been begun by Baltzer & Taaks, bankers, of New York, to recover \$40,670 due on unpaid coupons. An attachment has been put on the company's property at Kansas City.

Toledo, Peoria & Warsaw.

The United States Circuit Court finally settled upon Mr. A. Lawrence Hopkins as Receiver, and made an order appointing him January 20. Besides the usual powers of a Receiver, Mr. Hopkins is directed to examine into all contracts made by the trustees with the Illinois Central and to report to the Court whether, in his opinion, they ought to be annulled or continued in force. He is required to give bonds in \$100,000.

Mr. Hopkins was for some time and until recently Vice-President of the Illinois Central, and was before that General Manager of the Kansas City, St. Joseph & Council Bluffs road. He is esteemed, a man of energy and business capacity and decided ability. He is a son of President Hopkins, of Williams College.

North Pacific Coast.

This road was formally opened for travel January 7, by an excursion over the line, and regular trains began to run January 18.

The stations and distances from Saucelito, the bay terminus (six miles by water from San Francisco), northward are: Lyford's, 4 miles; Corte Madera, 7; Tamalpais, 9; San Rafael (branch), 10; San Anselmo, 11; Fairfax, 12½; Alderney, 18½; San Geronimo, 19½; Lagunitas, 22; Taylorville, 25; Jewell's, 26; Garcia, 29; Olema, 32½; Millerton, 36½; Marshall, 41½; Hamlet, 45; Tomales, 49. The schedule time from Saucelito to Tomales for the present will be 3½ hours. The company owns the ferry from Saucelito to San Francisco. The San Rafael Branch is about three miles long and is extended four miles further, to San Quentin, by the old San Rafael & San Quentin road, which the company leases, giving it a second outlet to the bay and a second ferry line to San Francisco.

Baltimore & Potomac.

The company has proposed an arrangement of the long standing controversy with the Georgetown and Washington people with respect to the Long Bridge over the Potomac at Washington. The offer made is to remove the several ob-

structions which imperil navigation at and near the present draw-way at the Virginia channel, viz.: the fender on the northwest angle of the draw-way, and the sunken or submerged piles at both ends and sides of the same, wherever they may be, endangering navigation. It is also proposed, in lieu of the present draw-way of only 62½ feet wide, to extend the same to a width of 78 feet in the clear, and to cause the drawbridge to be opened, on due signal, at any time of the day from one hour before sunrise to one hour after sunset. This proposal appears to be satisfactory to all parties concerned.

A second mortgage made to secure \$2,000,000 bonds to be issued has been put upon record in Maryland and the District of Columbia. It is made to Albert Hewson and John S. Lee, trustees.

Utica & Black River.

The extension to Morristown is now graded and ready for the rails to Brier Hill, N. Y., 18 miles north from the present terminus at Rodwood, with the exception of the cutting near Foster's Quarry. Negotiations are pending which may result in the building of a branch or extension from Morristown northeast to Ogdensburg.

Marmore & Madeira.

An English paper says:

"A numerous signed protest has been brought out at Cobija, stating objections to the late international agreement as to limits between Chili and Bolivia. Mr. Davis, the Engineer of the Marmore & Madeira Railroad, has presented his report to the Assembly, and awaits the resolution of that body to go on with the works. The district over which the railroad will pass is in general level, except the first league from San Antonio. Three rivers will require iron bridges. Col. Church had contracted with Messrs. Stephen W. Dorsey to complete the road in two years for \$8,000 a mile, on a base of 153½ miles at a cost of £925,000. The funds deposited in the Bank of England amount to £580,000, requiring still two millions and a half of dollars. In the Assembly there are two parties, one in favor of continuing the work, and the other that the contract with Col. Church should be rescinded. A great mistrust exists in the country about the enterprise. The discussion was still going on in the Assembly."

Chilian Railroads.

It is reported from Valparaiso that the Chilian Government has conceded a State guarantee of 7 per cent. on \$3,000,000 in favor of the two projected lines of Transandine railroad by Copiapo and Aconcagua, and the President has been authorized to contract a new foreign loan to bring in \$9,500,000. Of this sum \$4,500,000 are required to pay off the 7 per cent. loan contracted in London in 1867, and the remainder, \$5,000,000, is destined to convert into a foreign loan the various interior bonds issued by authority of Congress for various public works in Valparaiso and other parts of Chili. The promoters of the two Transandine railroads are allowed one year for the completion of the necessary surveys, and they are required to commence the work within a year after the approval of the plans they submit. The lines will then have to be completed within a term of five years. All materials will be admitted free of duty. There was a great diversity of opinion in the two Chambers as to the effect a Transandine railroad would have on Chilian commerce. Some of the senators and deputies were of opinion that direct communication with an Atlantic port would ruin Valparaiso, and so militate against the true interests of Chili. However, a memorial, signed by the larger part of the commercial community of this port, at length, set forth the conditions of trade between Europe and the West Coast, and the explanation served to prove such fears were illusory and contrary to the actual facts.

Information Withheld by Defaulting Companies.

The London Times says: "Complaints are constantly reaching us that no information of any kind can be obtained from responsible agents as to the position of several prominent American railways. In some cases coupons have been called in for payment, and when the date for paying came no money nor information has been forthcoming. The New York, Boston & Montreal is a prominent defaulter in this respect. The prospectus of the first mortgage bonds of that company, issued in 1873, gave a most favorable history of the state and prospects of the railway, and now it is to all appearance bankrupt. Those who are responsible for the statement upon which the money was obtained ought certainly to make clear the reason for this collapse."

ANNUAL REPORTS.

Delaware.

This company owns a line from Delaware Junction, on the New Castle & Frenchtown road, south to Delmar, on the Maryland line, 83 miles, with branches from Townsend, Del., to Massey's, Md., 9 miles, from Seaford, Del., west to the Maryland line, 6 miles, and from Clayton to Smyrna, 1½ miles, making 99½ miles in all. The road is worked by the Philadelphia, Wilmington & Baltimore Company, which receives 70 per cent. of the gross earnings.

The property is represented by the following securities:

Stock (\$13,444 per mile).....	\$1,330,952
Bonds (\$7,071 per mile).....	700,000
State loan (\$1,717 per mile).....	170,000

Total (\$22,232 per mile).....\$2,200,952

Of the bonded debt \$600,000 becomes due in July, 1875, but satisfactory arrangements have been made by which it will be paid or renewed. The present lease of the road has been renewed for 21 years from its expiration. The sinking fund amounts to \$164,201.05, an increase of \$16,240.25 since last year.

The operations of the road for the year ending October 31 were as follows:

	1874.	1873.
Earnings from passengers.....	\$155,007 28	\$157,844 16
Freights.....	269,078 91	368,298 76
Other sources.....	11,882 60	8,528 00

Total earnings.....	\$435,968 79	\$534,670 92
Expenses, 70 per cent., paid lessees.....	305,178 15	384,963 07
Dividends, interest and rentals.....	125,273 51	125,093 41

Total.....\$435,451 66\$510,056 48

Surplus.....\$5,517 13\$24,614 44

The earnings show a decrease last year of \$98,702.13, or 18.46 per cent. This is due mainly to the failure of the peach crop. The earnings per mile were \$4,404 in 1874, and \$5,401 in 1873.

Passenger trains ran 102,433 miles; freight, 154,731; other, 6,971; a total of 264,135 miles, an increase of 1,200 miles over the previous year.

The road has been kept in good order by the lessees. The Delaware & Chesapeake Canal bridge has been almost entirely rebuilt, both in masonry and superstructure, and thirteen other bridges greatly improved by new work. About nine miles of track have been relaid with new iron, in which were used over 800 tons of new rails. There have also been put into the track 37,457 ties, 510 being double length.

There was expended for construction, for excess of weight of new rails over old ones taken out, repairing the dam at Seaford, and new freight house at Dover and other improvements

and additions to the road, the sum of \$17,404.77, which has been paid for by the issue and sale of stock guaranteed by leases.

Central of Georgia.

This company operates the following lines:

	Miles.
Central Railroad:	
Savannah Division, Savannah to Macon.....	102
Atlanta Division, Macon to Atlanta.....	102½
Augusta Branch, Millen to Augusta.....	53
Eaton Branch, Gordon to Eatonton.....	39
	386½
Southwestern Railroad:	
Macon, Ga., to Euflula, Ala.....	143
Muscogee road, Fort Valley to Columbus.....	71
Fort Gaines Branch, Cuthbert to Fort Gaines.....	20
Albany Branch, Smithville to Albany.....	23½
Blakely Extension, Albany to Arlington.....	35½
Perry Branch, Fort Valley to Perry.....	12½
	305½
Upon County Railroad, Barnesville to Thomaston.....	16½
Total.....	708½

The property owned consists of the Savannah and Atlanta divisions, the other lines being leased. The Central company owns a large part of the stock of the Southwestern and Eaton Branch companies. The property is represented by the following capital account:

Stock.....	\$7,500,000
Funded debt.....	3,431,000
Steamer bonds.....	300,000
Fare notes.....	286,500
Total.....	\$11,517,500

This is at the rate of \$25.567 of stock per mile owned, and \$12.669 of bonds. The company holds \$699,460 in stock and \$72,500 in bonds of other companies, besides a large investment in steamship lines. The funded debt has been increased by \$615,000 since the last report.

The present report covers a period of only nine months, from November 30, 1873, to August 31, 1874, the fiscal year having been changed, so that it will end with August hereafter. The operations of the various lines for the nine months were as follows:

	Earnings.	Expenses.	Net.	Per c. Earn.
Savannah Div. and branches, \$1,102,735 80	\$682,658 83	\$413,076 97	\$269,581 83	24.43
Atlanta Div. 448,913 09	371,346 85	77,566 24	171,346 85	38.21
Southwestern Railroad 506,621 51	439,498 01	67,123 50	86,75 50	16.88
Upon County Railroad 6,368 82	6,972 30	\$603 48	109.47	386
Totals.....	\$2,064,629 22	\$1,507,475 99	\$557,153 23	73.01
Central Railroad Bank.....			14,092 75	
Total net earnings.....			\$571,245 98	

* Deficiency.

As compared with the same period of the preceding year, there was a decrease of \$341,533.80, or 14.18 per cent. in earnings; a decrease of \$751,490.95, or 35.36 per cent. in expenses; an increase of \$412,947.15, or 266.36 per cent. in net earnings.

The whole number of passengers carried was 84,949 against 103,025 for the same period in 1873. The cotton carried over the Savannah Division was 281,522 bales; Atlanta Division, 11,610; Southwestern road, 19,899; total, 313,031 bales against 277,732 in 1873. The nine months covered by the report do not include the three when the cotton transportation is heaviest.

Transportation (97.3 per cent. of total).....	\$412,246 05
Motive power (34.3 per cent.).....	517,376 83
Cars (9.3 per cent.).....	139,897 80
Repairs of road (23.8 per cent.).....	358,034 76
Stock killed (0.9 per cent.).....	12,947 00
Incidentals (3.5 per cent.).....	63,393 99
Repairs of buildings (0.9 per cent.).....	13,588 60
Total.....	\$1,507,475 99

Payments from net earnings were as follows:

Rent of Savannah Railroad.....	\$392,591 00
" Augusta & Savannah road.....	75,000 00
" Eaton Branch.....	14,000 00
Interest on bonds.....	179,492 50
Total.....	\$659,023 50

On the Savannah Division, 100 tons of new rails have been used in repairs, and it is estimated that 25 miles will be needed during the current year. On the Atlanta Division 2½ miles new iron and 47,208 ties have been used; 25 miles of new iron will be needed. On the Southwestern road about two miles new rails and 50,231 ties have been used; 10 miles of rails are needed. Some new buildings are needed.

Locomotives, Savannah Division.....	58
" Atlanta Division.....	22
" Southwestern road.....	36
	116

Passenger train cars.....	124
Freight train cars.....	1,441
Road or service cars.....	12

This is a decrease of 19 freight train cars since the last report, and an increase of one passenger train car and 10 engines. The company has also 133 cars in the Green Line.

There being some question about the company's right to own steamers, it has been resolved to organize a company under a charter granted in 1872 and to transfer the steamers to it, the Central company owning so much of the stock as to make it still the virtual owner of the ships, and as effectually control their management as though they stood in its name. Such an organization will not only relieve the company from any question as to the legality of owning steamships, but will afford an opportunity of enlarging the sphere of the steamship company so as to enable it to build ships for a foreign trade whenever the commerce of Savannah will warrant.

Cleveland & Pittsburgh.

The road owned by this company being leased and worked by the Pennsylvania Company, its report relates mainly to its financial affairs. For the year 1874 the receipts and disbursements were as follows:

Receipts from the lessee for accounts of rental, interest, sinking funds, etc.....	\$1,140,091 53
Dividends.....	\$786,786 37
Interest on funded debt.....	268,755 00
Sinking fund—consolidated mortgage.....	38,437 00
" " construction and equipment bonds.....	6,000 00
Maintenance of organization.....	9,462 00
	1,139,430 37
Balance.....	\$661 16

The capital stock remains substantially as at the last report. There is still outstanding of the old issue \$20,900 not presented for release into guaranteed stock. Of the \$18,000 second mortgage bonds reported as outstanding and unpaid at the close of last year, all have since been presented and retired, except \$500.

Provision has already been made for honoring the third mortgage bonds, \$1,252,000, at their approaching maturity, May 1 next, and public notice has been given that payment of the same may be anticipated by the holders thereof from and after December 15, at par and accrued interest on presentation

at the office of the Farmers' Loan & Trust Company, in New York. When these shall have been retired there will remain but two mortgages on the property, viz.: The fourth mortgage, maturing January 1, 1892, and the consolidated and sinking fund mortgage, maturing November 1, 1900.

There have been retired and canceled during the year by the operation of the sinking funds \$38,000 of the consolidated mortgage bond, leaving the amount outstanding at the close of the fiscal year \$1,461,000. The issues of these securities to provide means for payment of the third mortgage, as contemplated in the mortgage itself and stipulated in the lease, will amount to about \$1,275,000. The negotiations for the sale of the same, substantially at par, have been completed since the close of the fiscal year, and the results will appear in the succeeding report.

The construction and equipment bonds have been increased by the issue of an additional \$600,000 to the lessee to apply on account of betterments made in 1873. There have been retired \$3,000 of this issue in the sinking fund, and an equal amount remains in that fund awaiting the presentation of allotted bonds already called in. The balance sheet shows \$1,197,000 of these bonds outstanding, practically there are but \$1,194,000. These bonds mature January 1, 1913. The operation of the sinking fund will retire the whole of those now outstanding not later than the year 1906.

The capital account now stands as follows:

Old stock outstanding.....	\$20,900
Guaranteed stock.....	11,210,050
Scrip.....	12,261
Total stock.....	\$11,243,211
Second mortgage bonds.....	\$500
Third mortgage bonds.....	1,252,000
Fourth mortgage bonds and scrip.....	1,104,844
Consolidated bonds.....	1,461,000
Construction and equipment bonds.....	1,197,000
Total bonded debt.....	\$5,015,344
Total stock and bonds.....	\$16,258,555

The funded debt given does not include \$102,500 bonds in the sinking funds.

The Maine Railroad Commissioners' Report.

The report is now almost ready for submission to the Legislature, and a summary of it has been published. The Commissioners say that the material and equipment of the railroads are better than ever before. This is especially true with the Maine Central, Grand Trunk and the Portland & Rochester. Large expenditures of money have been made to make permanent improvements. No life has been lost upon the roads from the neglect of officers or employees. The Portland & Oxford Central Railroad still rests under the injunction imposed upon it on account of its poor and unsafe condition. Three new railroads have been opened for travel the past year—the Somerset, 20 miles (most of it built the previous year); the Lewiston & Auburn, a branch of the Grand Trunk, 5½ miles; the Bucksport & Bangor, 18 miles. The Bangor & Piscataquis has been extended 6½ miles to Abbot, making the aggregate length of steam railroads now in the State 960½ miles, and of horse railroads 6½ miles.

The Commissioners consider the maximum weight and length of trains important questions, and suggest it would be better to reduce the weight and great length, and multiply the number of trains and make imperative the rule to reduce speed inversely to the weight of trains moved; have a uniform speed of trains definitely fixed; regulate the weight and length of trains by it as a regular system; recommend leaving the problem of rates untrammelled by legislative enactments to those whose special business is to study its intricacies. Inflexible rates cannot be imposed without serious if not fatal injury upon railroads and business. The result of interference would be unjust discrimination between business centers. They recommend enactments providing against fraudulent use of tickets; arrangements on passenger trains for plain refreshments at moderate prices; companies to own sleeping cars and use and run nothing else on night trains; reducing the price of berths, placing them within reach of every one; entire abolition of the practice of issuing free passes; more careful management of freight department, to meet the interests of both the public and roads; adoption of a regular system of rewards for continued meritorious service and advance of compensation for faithfulness.

The subject of the decision of the courts that railroad tickets are "good until used," is taken up and discussed. A great deal of trouble is occasioned by these tickets—persons buying tickets and stopping over at stations several days. The law is pronounced just in making an uncanceled ticket good for its face, but the fact that a ticket has been presented and punched should be *prima facie* evidence that the party holding it started upon his journey with the tacit agreement to complete it without break, and that he did so complete it, according to contract implied by the ticket.

There has been a strikingly marked improvement on the Atlantic & St. Lawrence Division of the Grand Trunk Railway, and it has unquestionably become again a good road. A bridge 84 feet in length, near Bethel, has been built of iron, and an iron bridge at West Paris is taking the place of the wooden one. The new Lewiston & Auburn Branch has four iron bridges, that branch being laid with steel rails. The gauge on the Grand Trunk has been changed from broad to standard. The management of the Boston & Maine road is very successful; the road is well constructed and thoroughly equipped; the wharf accommodations are excellent and ample. There have been marked improvements made on the Portland & Rochester Railroad, the marginal way completed, bridges strengthened, repaired, etc. Earnings of the road will pay well on the investments. The Portland, Saco & Portsmouth, being leased by the Eastern, is always kept well equipped, and affords every facility for the dispatch of business and the safety and comfort of travelers. It has a new iron bridge at Biddeford, 606 feet long, and others in process of construction. The management of the Portland & Ogdensburg road is quiet, prudent and sagacious. The grading and masonry of the extension into New Hampshire is nearly completed through the White Mountain notch, the track being laid to within six miles of the Crawford House. The Portsmouth, Great Falls & Conway road, a small portion only of which is in the State, is much used for summer excursionists, and is in fair condition. The consolidated European & North American Railway and Bangor & Piscataquis Railroad has built and extended its branch from Guilford to Abbot, 6 2-15 miles, on its way to Mooshead Lake, which is 22 miles further on. The repairs on this road are not kept up as true economy requires. The St. Croix & Penobscot Railroad is safe for the kind and speed of trains run over it; its business is largely the transportation of lumber. The company has not abandoned the idea of extending the road to Grand Lake Stream, twelve miles. The Houlton Branch of the New Brunswick & Canada Railroad is in very fine condition. The Portland & Oxford Central Railroad still remains under the ban of the injunction imposed by the Supreme Court in November, 1873. No repairs have been made, the rolling stock has been taken off, and the road apparently abandoned. The stockholders have lost their entire investment in the road, and the innocent holders of bonds have met with an almost total loss. The Whitneyville & Machias Railroad is used for the transportation of lumber from Whitneyville to Ede waters. The Bucksport & Bangor Railroad is a

new road, extending from Bucksport to Brewer, and connecting with the European & North American Railroad. It is not altogether finished, though trains are run over it. The consolidated Maine Central Railroad embraces nearly all the railroad system of central Maine, controlling 355 miles of road. Every department of the corporation is run with great order and regularity, and wise and wholesome rules are strictly enforced. The track and the road-bed have been greatly improved, bridges built and substantial structures erected at stations. Good judgment has been exercised in the removal of the unwieldy and heavy Pullman cars from the day trains. Ten new bridges have been built, making a total of 2,341 feet; and a vast amount of new rails laid, including considerable steel rail. The rolling stock of the road and its several branches is in excellent condition. The Knox & Lincoln Railroad has strengthened several bridges the past season, and the road is believed to be at the present time in good condition. The road has needed and received a vast amount of grading, and is probably the most costly road in the State. It is 49 miles long and cost \$2,758,394.98. The business of the road is steadily increasing. The Somerset Railroad from West Waterville to Norridgewock, has been recently opened to a point about one mile south of Madison bridge. It is the intention of the company to push the road the next season to North Anson or Solon.

Fighting Snow on the Plains.

The Denver News of January 19 says: The train which left Kansas City, over the Kansas Pacific, a week ago last Thursday, arrived here at 1 o'clock yesterday morning, having made the tempestuous journey in eleven days. It left Wallace at 1 o'clock Sunday, and was pulled and pushed through by four engines, averaging 25 miles an hour. It brought six tons of mail, an immense bulk of express matter, and 85 passengers, of whom 77 were ticketed to Denver, two to San Francisco, and six to neighboring towns. Omnibuses being in waiting, the passengers were landed, carpet-bag in hand, at the various hotels by 1:30 o'clock, and at 3:30 the letter mail had been distributed, and at 7 a. m. all the express matter had been delivered by Wells, Fargo & Co. The mail-bags yielded to Denver parties alone about twelve thousand letters and over a ton of newspapers, to say nothing of the forty thousand letters and the tons of newspapers for surrounding points.

The train out of Kansas City Friday—a week ago last Friday—reached Salina Saturday. A fearful storm had been raging since the day before. There it stuck till Saturday's and Sunday's trains came up from the East. These and Thursday's train, which had been lying at Salina, were thrown into one, and that pulled out Sunday night. It came west to Russell, sixty miles from Salina, where it was compelled to remain till morning. The mercury dropped down to 22° below zero, and, so intense was the cold, that the passengers on the two sleepers, Atlas and Dexter, passed a miserable night, notwithstanding they had what would ordinarily be considered plenty of covering. All that day it stormed unceasingly. The wind blew a gale and the snow was wafted in sheets. The gale continued until late in the night, and the train stood still until Thursday, when it pushed ahead to Ellis, where the east-bound passengers, including a bridal party, had been blocked.

Here the passengers were obliged to remain until Friday. At 3 p. m. of that day the train ran up to Park's Fort, and there met the snow brigade, consisting of shovelers, a snow-plow and five engines, which had worked through from Wallace. The track was reported clear, and the train pulled out for the West, but on the second mile from the station butted against a snow bank, and backed out and returned to the fort. There was little or nothing to eat at the station, and the numerous stomachs aboard the train were beginning to grow uneasy; but Saturday morning a relief train, with cooks, cooking fixtures and plenty of provisions, arrived from Ellis. The passengers couldn't complain of the accommodations, and nobody seemed inclined to grumble. For, in addition to the abundance of substantial, the passengers luxuriated on select oysters from the express car, for which the epicurean palates of Denver were longing. The General Superintendent had notified the conductor to give the passengers the run of anything in the express car, and the company would foot the bill. The cases were opened and everybody invited to go for the bivalves. About 130 cans were emptied of their contents.

Meantime an "outfit," consisting of five engines, a snow-plow, and a large force of men, was organized, and on Saturday started ahead to clear the track, the train, with snow-plow and three engines, bringing up the rear. They encountered snow-drifts every few miles, but managed to make eighty miles that afternoon, and at 6 o'clock struck again within five miles of Sheridan. It had been growing colder all day, and that night the men refused to work, and hung about the stove and engine furnaces till morning. Sunday at 1 o'clock the train reached Wallace, where it passed the two trains which left Denver on the 11th and 12th, and arrived here at the hour indicated in the outset of this account.

Probably not less than 250 shovelers and other workmen were employed during the blockade on the Smoky Hill Division. The obstructions were scattered along over 220 miles of track. Cuts occur at short intervals, but, with but few exceptions, they are not so deep nor so well protected by snow-fences as those on the Denver Division. During the eleven days ending Sunday there were twenty-two engines in active service between Wallace and Brookville. The engines from the Kaw Valley Division were Nos. 15, 68, 71 and 87, while Superintendent Fisher dispatched to their aid Nos. 46, 64 and 66, from the Denver Division. These three locomotives and a snow-plow are turned up in the ditch a short distance beyond Hays. Seven engines were bounced from the rails during the eleven days. Three jumped the track early one morning, and by 3 o'clock p. m. they were back upon the rails, and at 6 p. m. they were plunging into fresh snow-banks. The engineers and section men, though inured to fatigue and toil, suffered terribly from exposure, but faced and fought it like heroes. The General Superintendent, Lyford, the Division Superintendents, Dorrance and Garner, and the Superintendent of Machinery, Waugh, shared the hardships with their workmen, even to shoveling snow from the cuts. The General Superintendent was generally to be found where the snow-plows were. For eleven days the engineers and firemen never left their posts. Some of them butted snow without food or sleep for forty-eight hours. Deserving of particular mention are Engineers Robert Henderson, Henry Chrysler, Charles Lake and Thomas Loftis. Half the time their work was to no purpose, the snow drifting into the cuts faster than they could shovel and plow it out. The drifts were often as solid as earth, and, in fact, not unlike it in color, for the winds picked up snow and gra-s, roots and all, and landed them together in the cuts. In one cut, near Ogallala, the snow was so hard that when two engines, weighing thirty-two tons apiece, fastened together, and running at thirty miles an hour, struck it, they ran right up on the top of the drift, and stood there without sinking in more than an inch or two. A passenger says the grandest sight he ever saw was when five engines and a snow-plow took a half-mile run into a huge drift. The drift was 100 feet long, and the engines were invisible to spectators from the time they struck it until they emerged, as if from a tunnel, at the other end. The water-tanks were all frozen up, those at Park's Fort and Grinnell having thirty-six inches of ice over them, and for four days the engineers kept their locomotives alive with melted snow.

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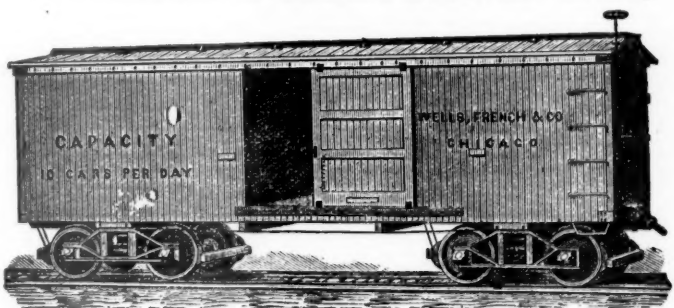


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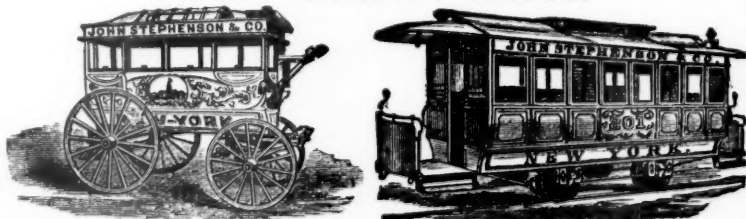
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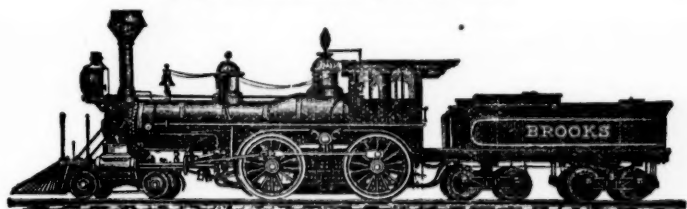
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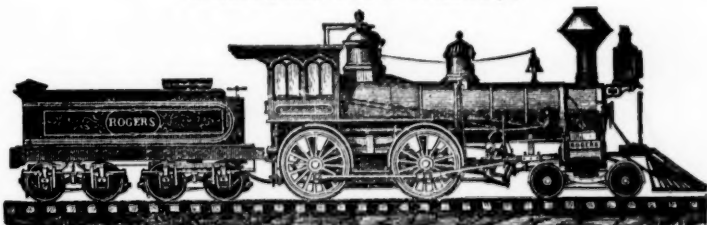


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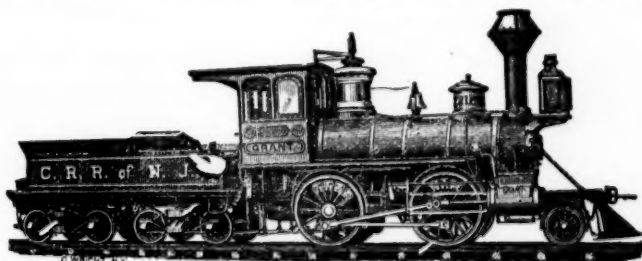
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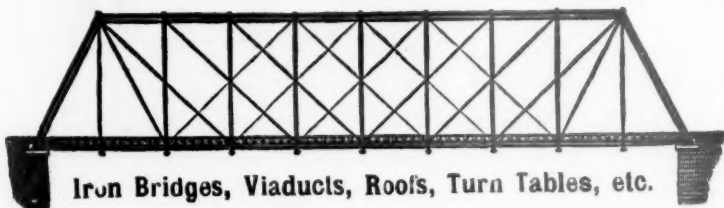
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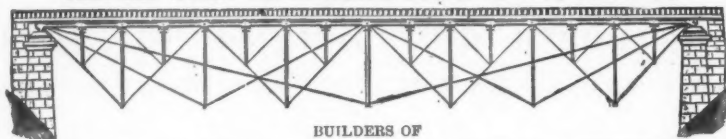
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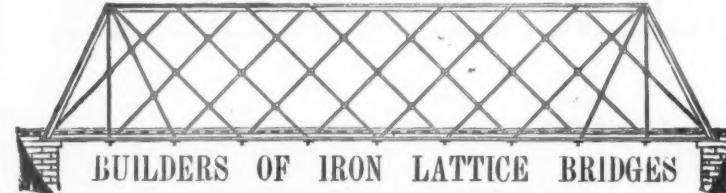
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